

What is the minimum clearance from a combustible material for a moisture-exhaust duct installed in a hospital?



a.
1 inch



b.
9 inches



c.
6 inches



d.
3 inches

Feedback

Your answer is incorrect.

(7.4.7)

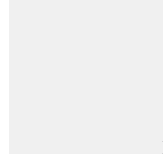
The correct answer is:

6 inches

Question 2

Correct

Mark 1.0 out of 1.0



Flag question

Question text

According to the B.149.1 a forced-air furnace shall be equipped with a high-temperature limit control set at a maximum temperature of:



a.
200 F



b.
250 F



c.
350 F



d.
300 F

Feedback

Your answer is correct.

(7.8.6)

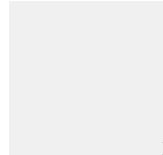
The correct answer is:

250 F

Question 3

Correct

Mark 1.0 out of 1.0



Flag question

Question text

A direct-fired door heater shall be interlocked with an associated door so the heater can operate only if the door served is open at least:



a.
60%



b.
50%



c.
70%



d.
80%

Feedback

Your answer is correct.

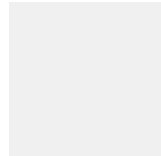
(7.19.2)

The correct answer is:
80%

Question 4

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

Which of the following is not a requirement when installing an appliance in a bedroom?



a.
The appliance must be equipped with a pressure regulator



b.
The appliance must be of the automatic temperature-controlled type



c.
The appliance must be vented and meet the requirements for combustion air specified by section 8



d.
The appliance must have a 100% safety shut-off control

Feedback

Your answer is incorrect.

(G&SR 7.25A.3)

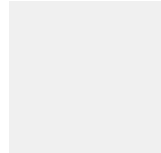
The correct answer is:

The appliance must be vented and meet the requirements for combustion air specified by section 8

Question 5

Correct

Mark 1.0 out of 1.0



Flag question

Question text

A furnace that is used to heat a residence under construction shall be installed on a finished concrete floor or on a poured concrete slab that is at least:



a.
4-inch thick



b.
1-inch thick



c.
6-inch thick



- d.
3-inch thick

Feedback

Your answer is correct.

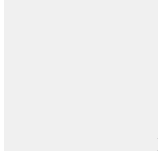
(7.13.5)

The correct answer is:
4-inch thick

Question 6

Correct

Mark 1.0 out of 1.0



Flag question

Question text

Where any combustible gas, vapor, or dust is present the outdoor intake for a DFMA shall not be less what horizontal distance from the vertical plane:



- a.
15 feet



- b.
20 feet



- c.
5 feet



- d.
10 feet

Feedback

Your answer is correct.

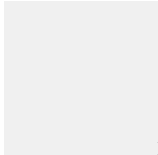
(7.20.9)

The correct answer is:
20 feet

Question 7

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

In a spray booth application, an interlock shall be provided to lock out the spraying equipment unless the DFPAH is operated in:



- a.
Process mode



- b.
Ventilation mode



- c.
Exhaust mode



- d.
Spray mode

Feedback

Your answer is incorrect.

(7.21.10)

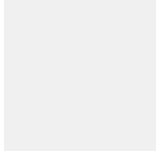
The correct answer is:

Ventilation mode

Question 8

Correct

Mark 1.0 out of 1.0



Flag question

Question text

A refrigerator installed in a dwelling unit shall be of the:



a.

Indoor-non-Direct Vent Type



b.

Direct-Vent Type



c.

Direct-fired Type



d.

Indirect Vent Type

Feedback

Your answer is correct.

(7.34.2)

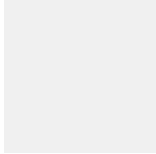
The correct answer is:

Direct-Vent Type

Question 9

Correct

Mark 1.0 out of 1.0



Flag question

Question text

When installing a commercial cooking appliance on an unprotected combustible material, the appliance shall have legs that provide a minimum clearance between the metal base and the material of:



a.

8-inch



b.

6-inch



c.

2-inch



d.

4-inch

Feedback

Your answer is correct.

(7.32.2)

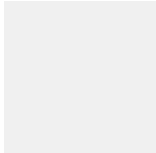
The correct answer is:

4-inch

Question 10

Correct

Mark 1.0 out of 1.0



Flag question

Question text

When a unit heater is installed in a garage, what is the minimum clearance that shall be maintained between the base of the unit heater and the garage floor?



a.
8 feet



b.
6 feet



c.
10 feet



d.
4 feet

Feedback

Your answer is correct.

(7.28.3)

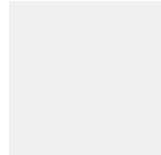
The correct answer is:

8 feet

Question 11

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

When installing an incinerator that requires draft-control the incinerator shall be installed with what type of draft-control device?



a.
Double-acting Barometric Damper



b.
Draft Hood



c.
Draft Divertor



d.
Single-acting Barometric Damper

Feedback

Your answer is incorrect.

(7.30.3)

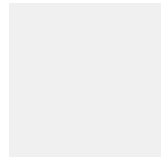
The correct answer is:

Single-acting Barometric Damper

Question 12

Correct

Mark 1.0 out of 1.0



Flag question

Question text

The discharge pipe for a temperature and pressure relief on a tank-type water heater or the pressure relief device for a tankless water heater shall have the discharge pipe terminate not less than _____ above the floor.



a.
150 mm



b.
6 mm



c.
12 mm



d.
300 mm

Feedback

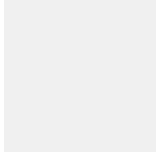
Your answer is correct.

(7.27.2)

The correct answer is:
300 mm

Question 13

Incorrect
Mark 0.0 out of 1.0



Flag question

Question text

Except for underfired storage-type water heaters, what is the minimum clearance from a combustibile material for any other type of water heater?



a.
2-inch



b.
6-inch



c.
12-inch



d.
4-inch

Feedback

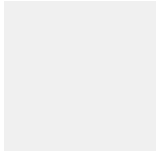
Your answer is incorrect.

(7.27.4)

The correct answer is:
6-inch

Question 14

Correct
Mark 1.0 out of 1.0



Flag question

Question text

What is the minimum distance from a property line when installing a outdoor pool heater?



a.
48-inch



b.
18-inch



c.
30-inch



d.

24-inch

Feedback

Your answer is correct.

(7.26.3)

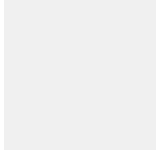
The correct answer is:

18-inch

Question **15**

Correct

Mark 1.0 out of 1.0



Flag question

Question text

What is the minimum clearance from the floor to an infrared heater when installed in a repair or shop area that communicates with an aircraft hangar?



a.
10 feet



b.
8 feet



c.
6 feet



d.
4 feet

Feedback

Your answer is correct.

(7.23.5)

The correct answer is:

8 feet

Identify the sub-atomic particles found in an atom? Select all that apply.

Select one or more:



a.
Electron



b.
Neutron



c.
Nucleus



d.
Proton



e.
Core

Feedback

Your answer is partially correct.

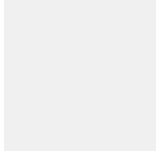
You have correctly selected 2.

The correct answers are: Proton, Neutron, Electron

Question **2**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What are factors of the state of matter?

Select one:



a.

Size and density



b.

Volume and mass



c.

Pressure and temperature



d.

Color and weight

Feedback

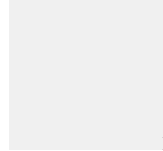
Your answer is incorrect.

The correct answer is: Pressure and temperature

Question **3**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What causes an atom to have a positive charge?

Select one:



a.

Electron surplus



b.

Electron deficient



c.

Neutron deficient



d.

Nucleus surplus

Feedback

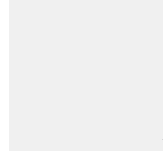
Your answer is incorrect.

The correct answer is: Electron deficient

Question **4**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What holds the electron in its orbit?

Select one:



a.

The law of repelling



b.

The law of attraction



c.

Total force



d.
Centrifugal force

Feedback

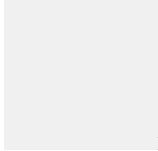
Your answer is incorrect.

The correct answer is: The law of attraction

Question 5

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What must occur for an atom to become negatively charged?

Select one:



a.
Neutron deficient



b.
Proton surplus



c.
Electron surplus



d.
Electron deficient

Feedback

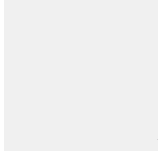
Your answer is incorrect.

The correct answer is: Electron surplus

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the name given to an atom with an unbalanced electrical charge?

Select one:



a.
Solid



b.
Ion



c.
Element



d.
Compound

Feedback

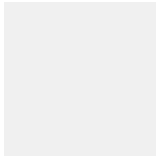
Your answer is correct.

The correct answer is: Ion

Question 7

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is a characteristic of a conductor relative to its electrons?

Select one:

☐

a.
Positively charged

☐

b.
Held loosely in their orbits

☒

c.
Held tightly in their orbits

☐

d.
Neutral charged

Feedback

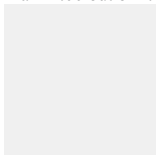
Your answer is incorrect.

The correct answer is: Held loosely in their orbits

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Identify the materials which are considered good conductors. Select all that apply.

Select one or more:

☐

a.
Plastic

☒

b.
Aluminum

☒

c.
Silver

☐

d.
Glass

Feedback

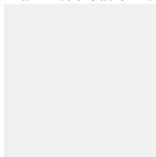
Your answer is correct.

The correct answers are: Silver, Aluminum

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is created when a large amount of electrons are moving through a small conductor?

Select one:

☐

a.
Low resistance

☐

b.
Voltage



c.
Heat



d.
Low vacuum pressure

Feedback

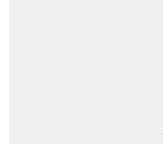
Your answer is correct.

The correct answer is: Heat

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How are conductors sized?

Select one:



a.
Weight



b.
Diameter



c.
Density



d.
Cross sectional area

Feedback

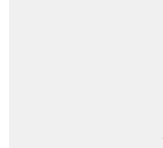
Your answer is correct.

The correct answer is: Cross sectional area

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which unit of measure is used to describe “Electromotive Force”?

Select one:



a.
Voltage



b.
Ampere



c.
Ohms



d.
Watts

Feedback

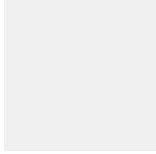
Your answer is correct.

The correct answer is: Voltage

Question **12**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What does “I” indicate in Ohm’s Law?

Select one:



a.
Resistance



b.
Current



c.
Voltage



d.
Conductance

Feedback

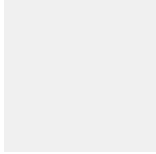
Your answer is correct.

The correct answer is: Current

Question **13**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

_____ is the potential pressure difference between two points in an electrical circuit.

Select one:



a.
Current



b.
Resistance



c.
Voltage



d.
Wattage

Feedback

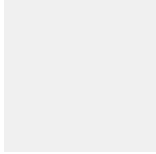
Your answer is correct.

The correct answer is: Voltage

Question **14**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is used to measure the amount of current that flows through a conductor ?

Select one:



a.

Amperes



b.
Volts



c.
Watts



d.
Ohms

Feedback

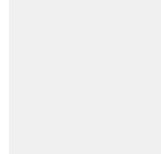
Your answer is correct.

The correct answer is: Amperes

Question **15**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Calculate the current through a circuit if it has 50 ohms of resistance and the voltage is 24 volts?

Select one:



a.
0.48 Ω



b.
2.08 Ω



c.
2.08 A



d.
0.48 A

Feedback

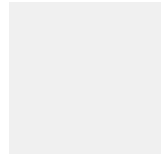
Your answer is incorrect.

The correct answer is: 0.48 A

Question **16**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Calculate the voltage of a circuit if it has 15 ohms of resistance and the current flow is 8 amps?

Select one:



a.
120



b.
7



c.
1.875



d.
225

Feedback

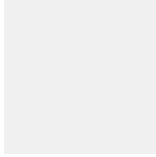
Your answer is correct.

The correct answer is: 120

Question **17**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What would be the anticipated resistance of a circuit with an EMF of 120 volts and a current of 6 amps?
Select one:



a.
0.05 Ω



b.
2 Ω



c.
20 Ω



d.
0.5 Ω

Feedback

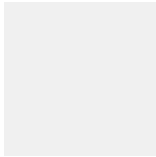
Your answer is correct.

The correct answer is: 20 Ω

Question **18**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following materials has the highest resistance to current flow?
Select one:



a.
Aluminum



b.
Copper



c.
Glass



d.
Salt Water

Feedback

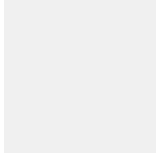
Your answer is correct.

The correct answer is: Glass

Question **19**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What wire gauge can handle the most current?

Select one:



a.

8



b.

10



c.

12



d.

14

Feedback

Your answer is incorrect.

The correct answer is: 8

At what speed does the electron move?

Select one:



a.

25 feet (7.62 meters) per second



b.

186,000 miles (299,792 kilometers) per hour



c.

60 miles (96.56 kilometers) per hour



d.

186,000 miles (299,792 kilometers) per second

Feedback

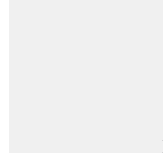
Your answer is incorrect.

The correct answer is: 186,000 miles (299,792 kilometers) per second

Question **2**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the type of transformer that increases voltage?

Select one:



a.

Step around



b.

Step up



c.

Step over



d.

Step down

Feedback

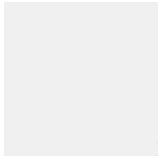
Your answer is incorrect.

The correct answer is: Step up

Question **3**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are the two parts of a switch?

Select one:



a.

Bridge and gap



b.

Lever and fulcrum



c.

Point and armature



d.

Contact and pole

Feedback

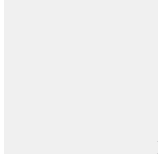
Your answer is correct.

The correct answer is: Contact and pole

Question **4**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the moving part of a switch?

Select one:



a.

Arc



b.

Contact



c.

Throw



d.

Pole

Feedback

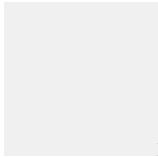
Your answer is correct.

The correct answer is: Pole

Question **5**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What type of switch can run 2 separate circuits independently and has a neutral position?

Select one:



a.

Rotary



b.
Single throw double pole



c.
Double pole single throw



d.
Double throw single pole

Feedback

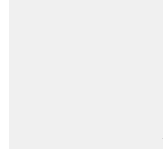
Your answer is incorrect.

The correct answer is: Double throw single pole

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the simplest type of fuse?

Select one:



a.
Metal conductor



b.
Circuit breaker



c.
Transforming



d.
Time delay

Feedback

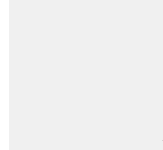
Your answer is correct.

The correct answer is: Metal conductor

Question 7

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

How many amps should be safely ran through a 15 amp fuse?

Select one:



a.
17



b.
15



c.
10



d.
12

Feedback

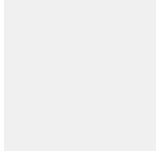
Your answer is incorrect.

The correct answer is: 12

Question **8**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the purpose of a circuit protector?

Select one:



a.

Control voltage



b.

Manually control the energy in a circuit



c.

Prevent fire and other damage



d.

Protect wires from the weather and mechanical damage

Feedback

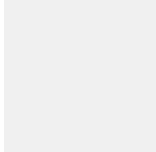
Your answer is correct.

The correct answer is: Prevent fire and other damage

Question **9**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What, if excessive, causes a circuit breaker to trip?

Select one:



a.

Current



b.

Ohms



c.

Voltage



d.

Resistance

Feedback

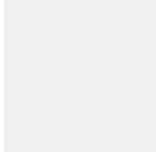
Your answer is correct.

The correct answer is: Current

Question **10**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the purpose of a transformer?

Select one:



a.

Increase the amount of resistance



b.

Increase or decrease the voltage



c.

Change from AC to DC



d.

Reverse the flow of electricity

Feedback

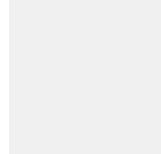
Your answer is incorrect.

The correct answer is: Increase or decrease the voltage

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How is electrical energy transferred from the primary to the secondary windings of a transformer?

Select one:



a.

With an electrical connection



b.

Induction



c.

With a switch



d.

Mechanically

Feedback

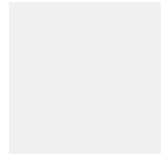
Your answer is correct.

The correct answer is: Induction

Question **12**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is required for induction to occur?

Select one:



a.

Magnetic field and moving conductor



b.

High voltage



c.

Open switch



d.

A perfect vacuum with static electricity

Feedback

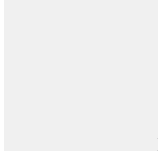
Your answer is correct.

The correct answer is: Magnetic field and moving conductor

Question **13**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of power can a transformer be used on?

Select one:



a.

AC or DC



b.

DC



c.

None of the above



d.

AC

Feedback

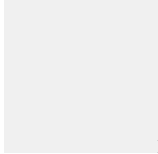
Your answer is correct.

The correct answer is: AC

Question **14**

Partially correct

Mark 0.50 out of 1.00



Flag question

Question text

What electrical components work using the principle of electromagnetism? Select all that apply:

Select one or more:



a.

Transformer



b.

Relay coil



c.

Light bulb



d.

Fuse

Feedback

Your answer is partially correct.

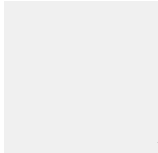
You have correctly selected 1.

The correct answers are: Transformer, Relay coil

Question **15**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In a relay, what is attracted to the stationary contact when the coil is energized?
Select one:



a.
An armature



b.
A spring



c.
An electron



d.
A motor

Feedback

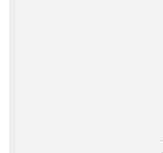
Your answer is correct.

The correct answer is: An armature

Question 16

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the primary advantage of using a relay?

Select one:



a.
Eliminates the need for fuses



b.
Smaller wire used from a remote switch



c.
Faster operation of a motor



d.
Reduces resistance in the circuit

Feedback

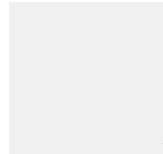
Your answer is incorrect.

The correct answer is: Smaller wire used from a remote switch

Question 17

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of contacts are used on a relay switch?

Select one:



a.
Both NC and/or NO are correct



b.
Normally closed (NC)



c.
Normally open (NO)



d.
Step down or step up

Feedback

Your answer is correct.

The correct answer is: Both NC and/or NO are correct

What type of diagram is used to illustrate wiring principles of circuits?
Select one:



a.
Ladder



b.
Moody



c.
Venn



d.
Stepped

Feedback

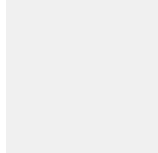
Your answer is correct.

The correct answer is: Ladder

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of current is most commonly generated in North America?
Select one:



a.
Universal



b.
Alternating



c.
Overloading



d.
Direct

Feedback

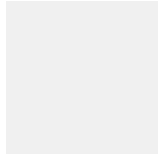
Your answer is correct.

The correct answer is: Alternating

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the term used to identify a rotation of 360° of an AC generator?
Select one:



a.
Hertz



b.
Circle



c.
Period



d.
Moment

Feedback

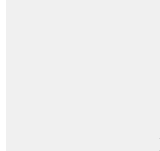
Your answer is correct.

The correct answer is: Hertz

Question 4

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

How many times is peak power created in a single rotation/cycle of an AC generator?

Select one:



a.
1



b.
60



c.
120



d.
2

Feedback

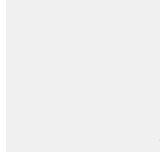
Your answer is incorrect.

The correct answer is: 2

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is a common source of DC power?

Select one:



a.
Electromagnet



b.
Hydroelectric plant



c.
Wall receptacle



d.
Batteries

Feedback

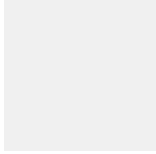
Your answer is correct.

The correct answer is: Batteries

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the primary difference between AC and DC?

Select one:



a.

Amount of voltage



b.

Intensity



c.

Amount of resistance



d.

Direction of electron flow

Feedback

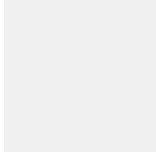
Your answer is correct.

The correct answer is: Direction of electron flow

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is always present around a conductor when current is flowing through it?

Select one:



a.

Perfect vacuum



b.

Light energy



c.

Magnetic field



d.

Heat energy

Feedback

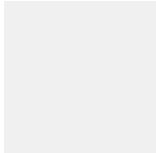
Your answer is correct.

The correct answer is: Magnetic field

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of circuit has only one conductive path for power to get to all loads?

Select one:



- a.
Short
- ☒
- b.
Series
- ☐
- c.
Parallel
- ☐
- d.
Complete

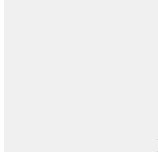
Feedback

Your answer is correct.

The correct answer is: Series

Question 9

Correct
Mark 1.00 out of 1.00



Flag question

Question text

In a parallel circuit, what would be the result of a failed wire to one of the loads?
Select one:

- ☒
- a.
All loads would continue to operate
- ☐
- b.
Only the load with the failed wire would stop operating
- ☐
- c.
All loads would stop operating
- ☐
- d.
Only the last load would stop operating

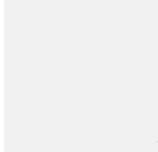
Feedback

Your answer is correct.

The correct answer is: Only the load with the failed wire would stop operating

Question 10

Correct
Mark 1.00 out of 1.00



Flag question

Question text

What does EOLR represent ?
Select one:

- ☒
- a.
Electrical Ohm Light Reducer
- ☐
- b.
Energized Over Load Relay
- ☐
- c.
End Open Line Relay
- ☐
- d.
End Of Line Resistor

Feedback

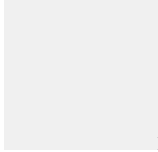
Your answer is correct.

The correct answer is: End Of Line Resistor

Question 11

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the purpose of an EOLR?

Select one:



a.

Create resistance in supervisory circuit



b.

Protects circuit from amp over load



c.

Increases voltage during short circuit



d.

Operate the last device in a zone

Feedback

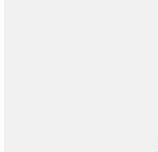
Your answer is incorrect.

The correct answer is: Create resistance in supervisory circuit

Question 12

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the typical voltage of a supervised alarm circuit equipped with an EOLR?

Select one:



a.

240v



b.

24v



c.

20-30mV



d.

120v

Feedback

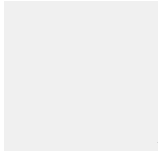
Your answer is correct.

The correct answer is: 24v

Question 13

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

A wire is broken on a supervised normally open parallel alarm circuit equipped with an EOLR. What would the resistance be?

Select one:



a.
12 ohms



b.
0 ohms



c.
4700 ohms



d.
Infinite

Feedback

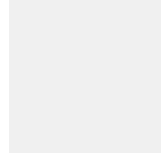
Your answer is incorrect.

The correct answer is: Infinite

Question **14**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is supervised in an alarm zone circuit?

Select one:



a.
The devices



b.
The panel



c.
The wires



d.
The devices and wires

Feedback

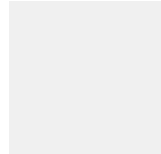
Your answer is incorrect.

The correct answer is: The wires

Question **15**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How does an alarm panels' supervisory function identify a broken wire in a circuit?

Select one:



a.
Change in temperature



b.
Change in voltage



c.
Change in wattage



d.
Change in resistance

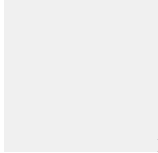
Feedback

Your answer is correct.

The correct answer is: Change in resistance

Question **16**

Incorrect
Mark 0.00 out of 1.00



Flag question

Question text

According to the “Electron Flow Theory”; in what direction does current flow in a circuit?
Select one:



a.
Positive to negative



b.
Downstream



c.
Upstream



d.
Negative to positive

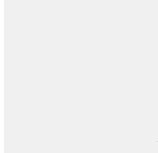
Feedback

Your answer is incorrect.

The correct answer is: Negative to positive

Question **17**

Correct
Mark 1.00 out of 1.00



Flag question

Question text

What is a point in a circuit called that has neither a surplus, nor shortage of electrons?
Select one:



a.
Sufficient



b.
Hot



c.
Cold



d.
Neutral

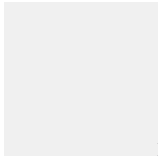
Feedback

Your answer is correct.

The correct answer is: Neutral

Question **18**

Incorrect
Mark 0.00 out of 1.00



Flag question

Question text

What is the electrical charge of the earth?

Select one:



a.
Neutral



b.
Ionized



c.
Positive



d.
Negative

Feedback

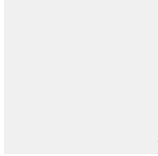
Your answer is incorrect.

The correct answer is: Neutral

Question **19**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the purpose of the neutral wire in a circuit?

Select one:



a.
Provide normal path for current to the source



b.
Provides a source of voltage to the loads in a circuit



c.
Route stray currents to the earth



d.
Safely discharges short circuits to a neutral location

Feedback

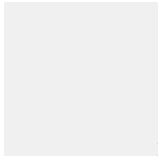
Your answer is incorrect.

The correct answer is: Provide normal path for current to the source

Question **20**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What happens when the resistance of a circuit is decreased?

Select one:



a.
Amps increase



b.
Amperage decreases



c.
Voltage increases



d.
Ohms increase

Feedback

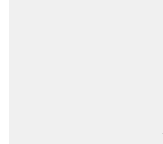
Your answer is incorrect.

The correct answer is: Amps increase

Question **21**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the condition of a circuit when a switch is in the closed position?

Select one:



a.
De-energized



b.
Shorted out



c.
Neutral



d.
Energized

Feedback

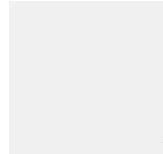
Your answer is correct.

The correct answer is: Energized

Question **22**

Correct

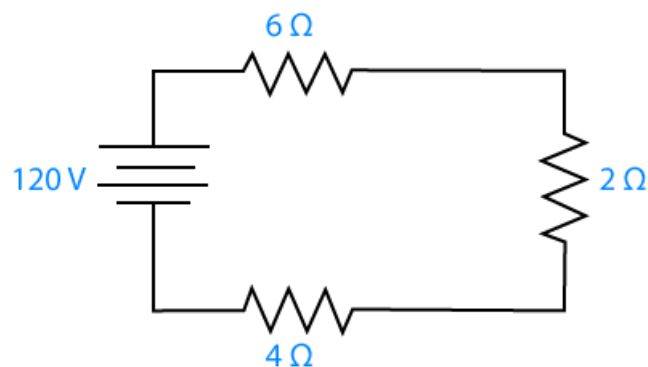
Mark 1.00 out of 1.00



Flag question

Question text

What is the circuit resistance of below image ?



Select one:



a.

12 Ω



b.

6 Ω



c.

4 Ω



d.

8 Ω

Feedback

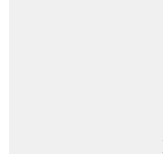
Your answer is correct.

The correct answer is: 12 Ω

Question 23

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the circuit amperage of above image ?

Select one:



a.

480 A



b.

120 A



c.

10 A



d.

30 A

Feedback

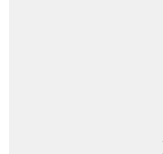
Your answer is incorrect.

The correct answer is: 10 A

Question 24

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of circuit is shown in above diagram ?

Select one:



a.

Short



b.

Parallel



c.

Series and Parallel



d.

Series

Feedback

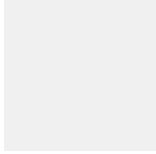
Your answer is correct.

The correct answer is: Series

Question **25**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the total circuit resistance in the series circuit?

Answer:

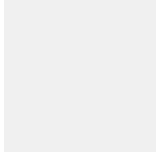
Feedback

The correct answer is: 14.6

Question **26**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the circuit ampacity for the series circuit ?

Answer:

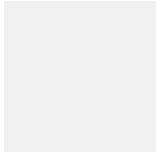
Feedback

The correct answer is: 8.22

Question **27**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the voltage drop across the 3.2 Ohm resistor ?

Answer:

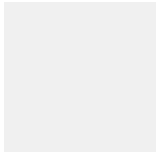
Feedback

The correct answer is: 26.3

Question **28**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the voltage drop across the 2 Ohm resistor ?

Answer:

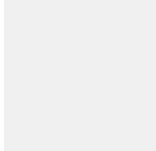
Feedback

The correct answer is: 16.44

Question **29**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the voltage drop across the 5 Ohm resistor ?

Answer:

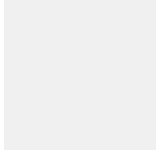
Feedback

The correct answer is: 41.1

Question **30**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the voltage drop across the 4.4 Ohm resistor ?

Answer:

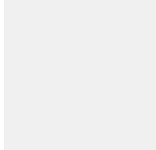
Feedback

The correct answer is: 36.17

Question **31**

Incorrect

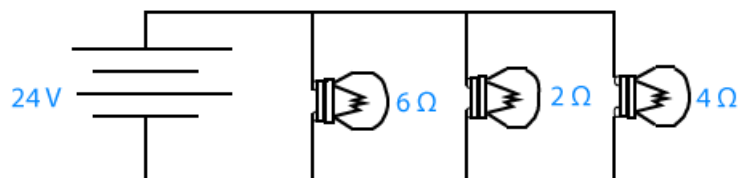
Mark 0.00 out of 1.00



Flag question

Question text

What is the circuit resistance of the image ?



Select one:



a.

21.1 Ω



b.

4 Ω



c.

1.09 Ω



d.

1.14 Ω

Feedback

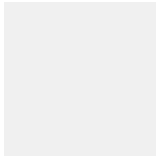
Your answer is incorrect.

The correct answer is: 1.09 Ω

Question **32**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the circuit amperage of above image ?

Select one:



a.
12 A



b.
22 A



c.
2 A



d.
3 A

Feedback

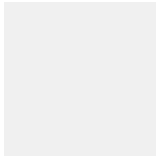
Your answer is incorrect.

The correct answer is: 22 A

Question **33**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of circuit is shown in above image ?

Select one:



a.
Series and parallel



b.
Short



c.
Parallel



d.
Series

Feedback

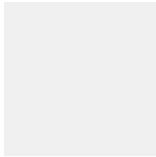
Your answer is correct.

The correct answer is: Parallel

Question **34**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Answer all questions in numerical form only.

What is the voltage drop across each load in the parallel circuit ? Answer Volts

Feedback

The correct answer is: 120

Question **35**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the amperage in the conductor at point "A" ?

Answer:

Feedback

The correct answer is: 12

Question **36**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the amperage in the conductor at point "B" ?

Answer:

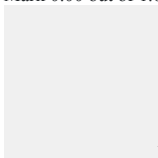
Feedback

The correct answer is: 20.57

Question **37**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the amperage in the conductor at point "C" ?

Answer:

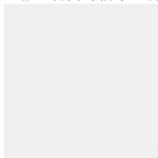
Feedback

The correct answer is: 28.57

Question **38**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the amperage in the conductor at point "D" ?

Answer:

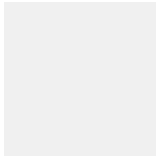
Feedback

The correct answer is: 39.48

Question **39**

Not answered

Marked out of 1.00



Flag question

Question text

What is the amperage in the conductor at point "E" ?

Answer:

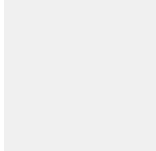
Feedback

The correct answer is: 54.48

Question 40

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the total resistance in the parallel circuit ? Answer Ohms

Feedback

The correct answer is: 2.2

When heated by the pilot burner, the thermocouple will generate a small electrical charge: approximately ____ to ____ millivolts

Select one:



a.

10 - 30



b.

10 - 20



c.

20 - 30



d.

10 - 15

Feedback

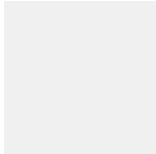
Your answer is correct.

The correct answer is: 20 - 30

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When the hot junction is heated, a small voltage is generated at the cold junction. The greater the temperature difference between the hot junction and the cold junction the greater the voltage generated. For this reason, it is important that only ____ to ____ inches of the hot junction is heated.

Select one:



a.

1/2 - 7/8



b.

3/8 - 1/2



c.

1/4 - 3/8



d.

1/2 - 3/4

Feedback

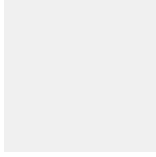
Your answer is correct.

The correct answer is: $3/8 - 1/2$

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A thermopile is composed of several thermocouples attached together in series. It is easy to distinguish a thermopile from a thermocouple because it is bigger. When subjected to heat, a much greater voltage is created, up to ____ millivolts.

Select one:



a.
750



b.
275



c.
20 - 30



d.
10 - 20

Feedback

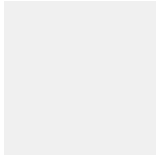
Your answer is correct.

The correct answer is: 750

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

. Current conducted through the flame (flame current) is generally in the range of ____ _____ amps.

Select one:



a.
2 -4 microamps



b.
30 millivolts



c.
750 millivolts



d.
2 - 4 milliamps

Feedback

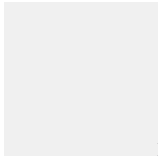
Your answer is correct.

The correct answer is: 2 -4 microamps

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Flame Rectification is achieved by placing a grounding electrode (usually the burner head) in the flame which is at least ____ times larger than the flame rod or flame electrode

Select one:



a.
2



b.
20



c.
15



d.
4

Feedback

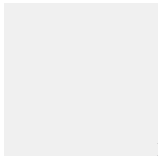
Your answer is correct.

The correct answer is: 4

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Flame failure response time for low-volume natural gas appliances is _____ seconds.

Select one:



a.
10



b.
90



c.
60



d.
20

Feedback

Your answer is correct.

The correct answer is: 90

What is another name for a Single Phase Induction Motor?

Select one:



a.
Sinusoidal motor



b.
Commutator motor



c.
Rotary motor



d.

Asynchronous motor

Feedback

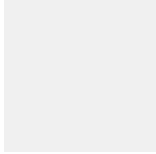
Your answer is correct.

The correct answer is: Asynchronous motor

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the name of the stationary part of a single phase motor?

Select one:



a.
Pole



b.
Shaft



c.
Rotor



d.
Stator

Feedback

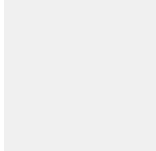
Your answer is correct.

The correct answer is: Stator

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following relates directly with the speed of the motor?

Select one:



a.
The rotational direction



b.
The speed of polarity changes



c.
The length of the shaft



d.
The number of coils (Poles)

Feedback

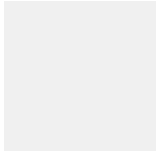
Your answer is correct.

The correct answer is: The number of coils (Poles)

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In reference to single phase induction motors. What does Ns refer to?

Select one:



a.
Speed of rotation



b.
VA rating



c.
Speed of resistance in ohms



d.
Frequency

Feedback

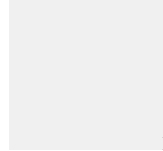
Your answer is correct.

The correct answer is: Speed of rotation

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The electrical power factor for a single phase motor is low as compared to 3 phase induction motors.

Select one:



True



False

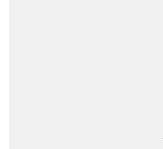
Feedback

The correct answer is 'True'.

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the most common type of three phase motor ?

Select one:



a.
Electrically commutated



b.
Induction



c.
Permanent split capacitor



d.
Shaded pole

Feedback

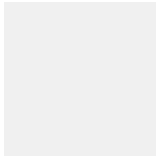
Your answer is correct.

The correct answer is: Induction

Question 7

Partially correct

Mark 0.50 out of 1.00



Flag question

Question text

Which of the following describes the principle of "induction" ? (choose more than one answer if applicable)

Select one or more:

☐

a.

A moving conductor is run through a magnetic field,

☒

b.

A stationary conductor is placed within a moving magnetic field

☐

c.

Opposite polarities attract

☐

d.

Like (the same) polarities attract

Feedback

Your answer is partially correct.

You have correctly selected 1.

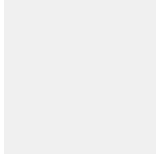
,

The correct answers are: A moving conductor is run through a magnetic field,, A stationary conductor is placed within a moving magnetic field

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What are the two main components of the three phase induction motor ?

Select one:

☒

a.

The starter and the coil

☐

b.

The stator and the rotor

☐

c.

The commutator and the brushes

☐

d.

The capacitor and the commutator

Feedback

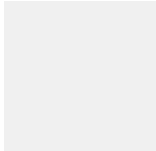
Your answer is incorrect.

The correct answer is: The stator and the rotor

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which part of an electric motor is in motion when operating ?

Select one:



a.
The rotor



b.
The brushes



c.
The stator



d.
The windings

Feedback

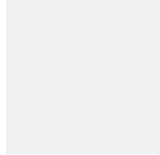
Your answer is correct.

The correct answer is: The rotor

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following is an alternative name for an induction motor ?

Select one:



a.
Hamster wheel



b.
Squirrel cage



c.
Rotary



d.
Cycling motor

Feedback

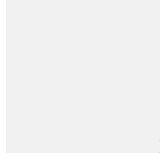
Your answer is correct.

The correct answer is: Squirrel cage

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following refers to the rate of the rotating magnetic field in an induction motor ?

Select one:



a.
Synchronous speed



b.
Rated speed



c.
Winding velocity



d.

Rpm

Feedback

Your answer is correct.

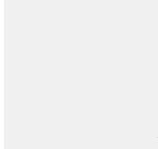
The "rated" speed refers to the rpm of the rotor

The correct answer is: Synchronous speed

Question 12

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following is a description of "slip" when referencing an induction motor ?

Select one:



a.

The capacitor's start up delay.



b.

The clutch efficiency of the motor.



c.

The difference between the rated and synchronous motor speeds.



d.

The degree of drive belt lag.

Feedback

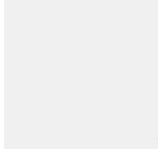
Your answer is correct.

The correct answer is: The difference between the rated and synchronous motor speeds.

Question 13

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The percentage of slip also represents the amount of _____ ?

Select one:



a.

Torque



b.

Horsepower



c.

Efficiency



d.

Amperage draw

Feedback

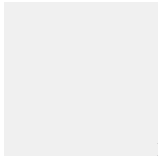
Your answer is correct.

The correct answer is: Torque

Question 14

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What does NEMA stand for ?

Select one:



a.

National Electrical Manufacturers Association



b.

Nominal Efficiency Maintenance Accord



c.

None Equivalent Measures Encoded



d.

National Energy Maintenance Enterprise

Feedback

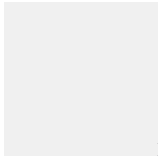
Your answer is correct.

The correct answer is: National Electrical Manufacturers Association

Question **15**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What are the three main electrical components of a variable frequency drive ?

Select one:



a.

Diodes, capacitors, and transistors.



b.

Sources, switches, and loads.



c.

VFD's are non electrical.



d.

Conductors, insulators, and semiconductors.

Feedback

Your answer is incorrect.

The correct answer is: Diodes, capacitors, and transistors.

Why is high voltage more dangerous to human shock than low voltage?

Select one or more:



a.

Low voltage lasts only a split second



b.

High voltage cant be grounded



c.

Low voltage blows breakers



d.

High voltage over comes resistance

Feedback

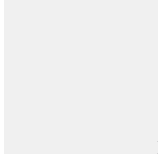
Your answer is correct.

The correct answer is: High voltage over comes resistance

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Why is water dangerous when working around electrical power?

Select one:



a.

Water increases the voltage



b.

Water gives a path for stray current to the ground



c.

Water reacts chemically with some types of conductors



d.

Water decreases the resistance of the body

Feedback

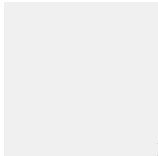
Your answer is correct.

The correct answer is: Water decreases the resistance of the body

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the first thing that should be done when an un-conscious shock victim is discovered?

Select one:



a.

Check for breathing



b.

Determine if the cause of shock is still present



c.

Check for a pulse



d.

Start CPR

Feedback

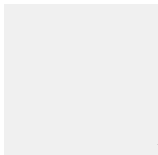
Your answer is correct.

The correct answer is: Determine if the cause of shock is still present

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

List the factors that effect the severity of electrical shock to a body?

Select one:



a.

Ventricular cavitation occurs within the body



b.

The heart muscles cannot move and severe burns



c.

The body goes into a Cardiopulmonary state



d.

The heart beats at an excessive rate and muscles begin to vibrate

Feedback

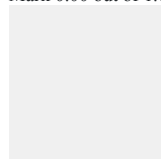
Your answer is correct.

The correct answer is: The heart muscles cannot move and severe burns

Question **5**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the lowest amperage during electrical shock that will likely result in cardiac arrest?

Select one:



a.

above 200 amps



b.

above 200 mA



c.

above 1 amp



d.

above 2 amps

Feedback

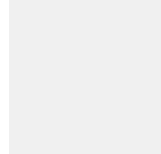
Your answer is incorrect.

The correct answer is: above 200 mA

Question **6**

Partially correct

Mark 0.67 out of 1.00



Flag question

Question text

What are variables that effect the severity of electrical shock on the body? select all that apply.

Select one or more:



a.

Duration of exposure to the current



b.

Temperature of the surrounding atmosphere



c.

Path of current through the body



d.
Amount of sweat or moisture on the skin

Feedback

Your answer is partially correct.

You have correctly selected 2.

The correct answers are: Path of current through the body, Amount of sweat or moisture on the skin,
Duration of exposure to the current

What is the voltage found in a residential distribution panel?

Select one:

☐

a.
120/240 volt single-phase

☒

b.
120/240 three-phase

☐

c.
24/120 three-phase

☐

d.
24/120 single-phase

Feedback

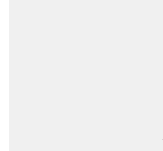
Your answer is incorrect.

The correct answer is: 120/240 volt single-phase

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are types of Solder-less connections? Select all that apply.

Select one or more:

☒

a.
Crimp-on

☒

b.
Insulated cap

☐

c.
Press blade

☐

d.
Push in

☐

e.
Thread less

Feedback

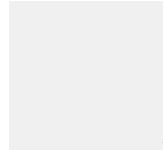
Your answer is correct.

The correct answers are: Crimp-on, Insulated cap

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is used to identify the size and capacity of insulated-cap connectors?

Select one:



a.
Color coded



b.
Marked with wire gauge size



c.
Marked with gauge size and/or color coded



d.
Amperage stamp on end

Feedback

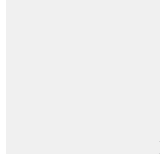
Your answer is correct.

The correct answer is: Marked with gauge size and/or color coded

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Where must most line voltage connections occur?

Select one:



a.
In a light fixture



b.
In a wall



c.
In an electrical panel



d.
In a junction box

Feedback

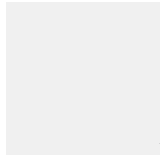
Your answer is correct.

The correct answer is: In a junction box

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of conduit material **can not** come in contact with concrete/cement?

Select one:



a.
Aluminum



b.
Poly vinyl chloride



c.
Thermoplastic



d.
Galvanized steel

Feedback

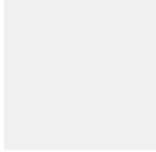
Your answer is correct.

The correct answer is: Aluminum

Question 6

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What type of conduit should be used for connecting to a motor?

Select one:



a.

LFMC



b.

RMT



c.

EMT



d.

PVC

Feedback

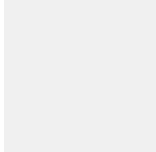
Your answer is incorrect.

The correct answer is: LFMC

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which type of circuit breaker is used for 240 V circuits?

Select one:



a.

Auto reset



b.

Double pole



c.

Bonded



d.

Rubber jacket

Feedback

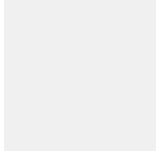
Your answer is correct.

The correct answer is: Double pole

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which of the following connections may not be soldered?

Select one:



a.
240V neutral wires



b.
240 V hot wires



c.
Bonding conductors



d.
Switch poles

Feedback

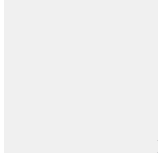
Your answer is incorrect.

The correct answer is: Bonding conductors

Question **9**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which is the minimum size color code Twist-on Wire Connector that should be used to connect 2 – 14 AWG conductors?

Select one:



a.
Grey



b.
Blue



c.
Orange



d.
Red

Feedback

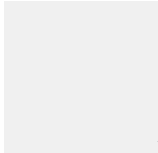
Your answer is incorrect.

The correct answer is: Orange

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What does the abbreviation EMT indicate?

Select one:



a.
Engineered metal tubing



b.
Electrically molded tubing



c.
Electrical metallic tubing



d.
Engineered molded tubing

Feedback

Your answer is correct.

The correct answer is: Electrical metallic tubing

What would the power rating be for a 5 amp DC single phase motor designed to operate at 12 volts?

Answer:

Feedback

Mechanical Energy & Power

Electrical power is the rate at which work is done in an electric circuit in a given time.

Watts (W) are used to measure power.

1 watt is equal to 1 volt multiplied by 1 amp.

$$\text{Watts} = \text{Volts} \times \text{Amps}$$

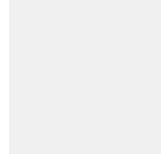
$$\text{Watts} = 12V \times 5 \text{ amps}$$

The correct answer is: 60

Question 2

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

If a AC single phase motor had a power rating of 1125 watts, what would the motor be rated in horsepower?

Answer:

Feedback

Horsepower

One horse can lift 330lbs/100ft/min or (550lbs/ft/sec) which is equivalent to 750 watts of power or 1.0 horsepower in the international system (SI) and the heat equivalent of 2550BTUs (British thermal units) or 4500 kilograms/meters /minute.

Therefore:

$$\text{Watts} \div 750 \text{ watts/hp} = \text{HP}$$

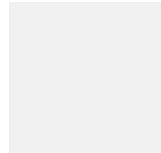
$$1125W \div 750W/HP = 1.5 \text{ HP}$$

The correct answer is: 1.5

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Select the type of single phase motor that best matches the description below.

A low horsepower, low torque motor that does not use a commutator or capacitor. This motor uses metal rings (typically copper) wrapped around the stator to put the induced alternating magnetic field out of phase. Copper is used for the rings as it has a different resistance when compared to the typical stator construction of steel. It is a self starting motor that has basic construction.



a.
Shaded Pole



b.
Capacitor Start



c.
Split Phase



d.
Permanent Split Phase

Feedback

Your answer is correct.

The shaded pole motor, like all induction motors has a stator and a rotor. The stator carries a main winding and a shaded winding know as the shaded coil. The shaded coil is usually a solid copper ring wrapped around a portion of the stators metal case. A shaded pole motor may have more than one shaded pole. Due to the difference in resistance between the copper shaded ring and the stators metal construction (usually some form of iron) the induced current (present in both metals) creates a difference in polarity within the stator's magnetic field. The shade pole can not be removed from the circuit due to magnetic field being generated from induced current. Shaded pole motors are self starting, low torque, low efficiency, and designed with low power ratings. Shaded pole motors are cheap to make and reliable due to their very basic construction.

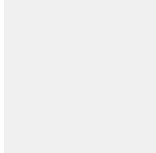
The correct answer is:

Shaded Pole

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Select the type of single phase motor that best matches the description below.

This type of motor has high starting torque as well as high running torque. They are good motors for use in applications that require frequent starting and stopping, such as refrigerator pumps. They contain capacitors, 2 windings, and a centrifugal switch.



a.

Shaded Pole



b.

Capacitor Start



c.

Capacitor Start Capacitor Run



d.

Split-Phase

Feedback

Your answer is correct.

Capacitor start-capacitor run motor is much like the capacitor start motor in that it has two windings, a start winding (auxiliary winding) in series with a capacitor and centrifugal switch and a main winding. The purpose of the start winding is the same, to get the motor running and add extra starting torque. The difference is that there is a capacitor in parallel with the start winding that does not get remove from the circuit, only the start capacitor gets remove when the motor get up to 75% of rated speed. The purpose of the capacitor that stays in the circuit is to keep the starting winding active and out of phase with the main winding. Keeping both windings in use will increase torque while the motor is running. This motor is good for higher inertia loads and where frequent starting and stopping are required. It is used to in pumps

present in refrigerators, air conditioners, compressor tools and many loads of this nature.

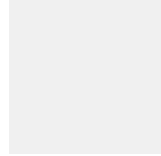
The correct answer is:

Capacitor Start Capacitor Run

Question 5

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Select the type of single phase motor that best matches the description below.

This type of motor uses 2 windings, a start winding and a run winding. The start winding is removed from the circuit once the motor gets up to speed through the use of a centrifugal switch. Starting of the motor is achieved by using different gauge wire for the windings and starting torque is low. The different gauge windings gives them a different resistance and therefore puts their magnetic fields out of phase and the rotor begins to spin. Once the velocity of the rotor reaches a certain threshold the start winding is removed from the circuit and the rotor continues to spin and "chase" the magnetic field being generated by the run winding.



a.
Split-Phase



b.
Capacitor Start



c.
Permanent Split Capacitor



d.
Shaded Pole

Feedback

Your answer is incorrect.

The split phase motor typically uses a single phase 120 volt power supply and has a rating of 1 HP or less. Split phase motors are used in applications where starting torque requirements are low. Common applications of split phase motors include: fans, blowers, pumps, office machines, and tools, such as small saws or drill presses. The split phase motor has a start and run winding. Both windings are energized when the motor is started. When the motor reaches about 75% of its rated full load speed, the start winding is disconnected from the circuit by a centrifugal switch.

Split-phase motors are also known as resistance phase motors. This is because they have additional resistance added to the start winding. Due to the main winding having a different resistance when compared to the starting winding it will put each winding out of phase, creating a rotational magnetic field and force the rotor to start moving. This starting winding will give the initial push to start the rotation, and the main winding will keep the motor running.

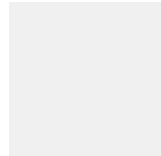
The correct answer is:

Split-Phase

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The graphic below shows current powering a motor through the use of a mechanical commutator.

Feedback

Your answer is correct.

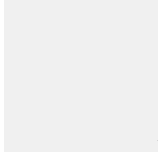
The correct answer is:

The graphic below shows [DC] current powering a motor through the use of a mechanical commutator.

Question 7

Correct

Mark 1.00 out of 1.00



[Flag question](#)

Question text

The term Hertz is used when making reference to which of the following?

Select one:



a.
Voltage



b.
Amperage



c.
Frequency



d.
Current

Feedback

Your answer is correct.

Frequency

Frequency is how often something repeats. In alternating current, the frequency is the number of times a sine wave completes a cycle going from positive to negative repeating in a given time period (seconds). It is measured in hertz. Hertz is the number of cycles per second (one hertz is equal to one cycle per second). The more cycle that occurs per second, the higher the frequency. In north America the frequency

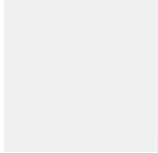
of the voltage and current delivered to homes and business is 60Hz.

The correct answer is: Frequency

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The graphic below shows a frequency of Answer Hz.

Feedback

Frequency

Frequency is how often something repeats. In alternating current, the frequency is the number of times a sine wave completes a cycle going from positive to negative repeating in a given time period (seconds). It is measured in hertz. Hertz is the number of cycles per second (one hertz is equal to one cycle per second). The more cycle that occurs per second, the higher the frequency. In north America the frequency of the voltage and current delivered to homes and business is 60Hz.

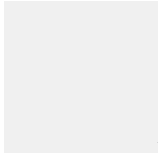
The number of complete cycles in the graphic is 7 cycles elapsed over a period of 1 second; therefore, 7Hz.

The correct answer is: 7

Question 9

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

_____ is the measure of the force required to cause rotation.

Select one:



a.
Power



b.
Pressure



c.
Torque



d.
Force

Feedback

Your answer is incorrect.

Torque

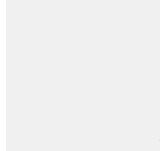
Torque is the measure of the force that can cause an object to rotate. The more torque a motor produces the more work it can do. The torque output of a motor is the amount of rotational force that the motor develops and is measured in Newton-meters (Nm). The torque and speed relationship are inversely proportional since the rated output power of a motor is fixed value. As output speed increases, the available output torque decreases proportionately. The same holds true if the output speed decreases, the available output torque increases proportionately.

The correct answer is: Torque

Question 10

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The most common motor used in the HVAC industry is the _____ motor.

Select one:



a.
Split-Phase



b.
Shaded Pole



c.
Permanent-Split Capacitor Motor



d.
Capacitor Start Capacitor Run

Feedback

Your answer is correct.

Permanent-split capacitor motor is much like the capacitor start motor in that it has two windings, a start winding (auxiliary winding) with a capacitor in series and the main winding. The purpose of the start winding with the capacitor is to create a rotating magnetic field. The difference is that the capacitor and the start winding remain in the circuit when the motor gets up to rated speed. The advantage being higher efficiency and higher power output. Another difference worth noting is no starting mechanism (centrifugal switch) is needed and the rotation is reversible. Special applications include fans and blowers, air conditioners, coolers, furnaces, unit heaters, roof ventilators, dehumidifiers, garage door openers, and other applications that more torque. *The permanent-split capacitor motor is by far the most*

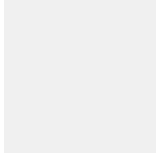
common motor encountered in the HVAC industry.

The correct answer is: Permanent-Split Capacitor Motor

Question **11**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

_____ is a measure of how fast energy is applied or consumed in a given amount of time.

Select one:



a.
Power



b.
Pressure



c.
Amperage



d.
Torque

Feedback

Your answer is incorrect.

Mechanical Energy & Power

Electrical power is the rate at which work is done in an electric circuit in a given time.

Watts (W) are used to measure power.

1 watt is equal to 1 volt multiplied by 1 amp.

Watts = Volts x Amps

One watt is equal to one joule of work done per second.

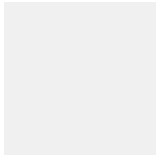
Watt = Joule/second

The correct answer is: Power

Question **12**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which of the following is **not** a type of Single phase motor?

Select one:



a.
3 Pole



b.
2 Pole



c.
Split-phase



d.
4 Pole

Feedback

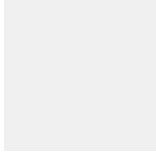
Your answer is incorrect.

The correct answer is: 3 Pole

Question **13**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of single-phase motor does not use any powered windings or starters to get the rotor spinning. Select one:



a.
Shaded pole motors



b.
Split phase motors



c.
PSM motor



d.
Capacitor Motors

Feedback

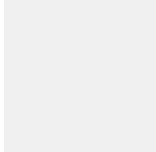
Your answer is correct.

The correct answer is: Shaded pole motors

Question **14**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of Single phase motor is considered to have a high starting torque? Select one:



a.
Split-phase motor



b.
Capacitor-start motor



c.
Shaded pole motor



d.
Capacitor start-capacitor run motor

Feedback

Your answer is correct.

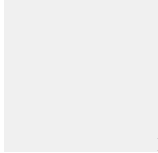
Capacitor Start Capacitor Run

Capacitor start-capacitor run motor is much like the capacitor start motor in that it has two windings, a start winding (auxiliary winding) in series with a capacitor and centrifugal switch and a main winding. The purpose of the start winding is the same, to get the motor running and add extra starting torque. The difference is that there is a capacitor in parallel with the start winding that does not get remove from the circuit, only the start capacitor gets remove when the motor get up to 75% of rated speed. The purpose of the capacitor that stays in the circuit is to keep the starting winding active and out of phase with the main winding. Keeping both windings in use will increase torque while the motor is running. This motor is good for higher inertia loads and where frequent starting and stopping are required. It is used to in pumps present in refrigerators, air conditioners, compressor tools and many loads of this nature.

The correct answer is: Capacitor start-capacitor run motor

Question **15**

Incorrect
Mark 0.00 out of 1.00



Flag question

Question text

A device used to alter the electrical power being delivered to a motor for the purpose of speed control is called a VFD. What does VFD stand for?



a.
Voltage Fluctuating Device



b.
Variable Flow Device



c.
Variable Frequency Device



d.
Voltage Frequency Device

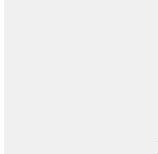
Feedback

Your answer is incorrect.

The correct answer is:
Variable Frequency Device

Question 16

Correct
Mark 1.00 out of 1.00



Flag question

Question text

An ECM is used to take alternating current and convert it to a fluctuating direct current at a rate that can be altered. What does ECM stand for?



a.
Electronic Capacitor Motor



b.
Electronically Controlled Motor



c.
Electronically Commutated Motor



d.
Elevated Capacity Motor

Feedback

Your answer is correct.

Electronically Commutated Motors (ECM)

An ECM controller converts alternating current single phase power to direct current power and then pulses that current at a desired frequency. This allows control over the motors speed in a similar way to a VFD. ECMs are a very efficient way to vary the speed of a motor and they offer some advantages over

VFD controlled motors. They are low heat devices, create low startup/shutoff velocities, and quiet while in operation. These advantages are typically applied to HVAC systems and can benefit filter performance, noise, wear on the system, temperature accuracy/spill over, and longevity.

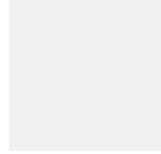
The correct answer is:

Electronically Commutated Motor

Question **17**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What type of protection method would be necessary to prevent unwanted starting of a motor after a power failure?



a.
Rotational Protection



b.
Overcurrent protection



c.
Thermal protection



d.
Low voltage protection

Feedback

Your answer is incorrect.

Low Voltage Protection

Low voltage protection (LVP) is primarily used after an interruption in power is experienced. After a power outage it can be important to ensure that some electric motors do not power back on before certain conditions are met, this is where LVP is utilized. This is accomplished through relays and switches that would be part of the motors wiring.

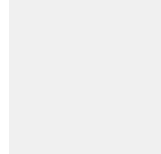
The correct answer is:

Low voltage protection

Question **18**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What statement best describes VFD operation?



a.
A VFD is a type of electric motor that can vary the power rating depending on the current load on the motor. It will always have the rated horsepower no matter what load is placed on the motor.



b.
A VFD converts alternating current to pulsing direct current before sending power to the electric motor.



c.
A VFD alters the frequency of AC power to an electric motor. This can alter the speed of the electric motor as a motors speed is directly related to the delivered frequency.



d.
A VFD is a protection device used in all electric motors that can prevent burnout and overheating.

Feedback

Your answer is correct.

Variable Frequency Drive

Variable frequency drive (VFD) is a motor controller placed between the motor and power supply that can change the frequency (Hz) and voltage of the power supplied to an electric motor. Using a VFD will allow you to control the motors speed, power, start velocity, and stop velocity. These devices can be used to save power, match motors to their applications, and even extend the usable life of a motor. VFDs can be integrated into newer smart devices and controllers to use intelligent applications of motor technology. Usually you will find VFD on fans, pumps, and compressors where different operating speeds are a requirement.

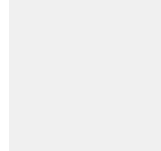
The correct answer is:

A VFD alters the frequency of AC power to an electric motor. This can alter the speed of the electric motor as a motors speed is directly related to the delivered frequency.

Question 19

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Select the advantages an electronically commutated motor might have over a motor powered by a variable frequency drive.

☐

a.
Low start and stop velocities

☐

b.
Low heat output

☒

c.
Reduced power consumption

☒

d.
More powerful

☒

e.
Longer life

☐

f.
Quiet operation

Feedback

Your answer is incorrect.

Electronically Commutated Motors (ECM)

An ECM controller converts alternating current single phase power to direct current power and then pulses that current at a desired frequency. This allows control over the motors speed in a similar way to a VFD. ECMs are a very efficient way to vary the speed of a motor and they offer some advantages over VFD controlled motors; *they are low heat devices, create low startup/shutoff velocities, and are quiet while in operation.* These advantages are typically applied to HVAC systems and can benefit filter performance, noise, wear on the system, temperature accuracy/spill over, and longevity.

The correct answers are:

Low start and stop velocities,

Quiet operation,

Low heat output

What is used to start the rotation of a three phase induction motor as compared to a single phase motor?

Select one:

☒

a.
Start winding

☐

b.
Electromagnetic induction



c.
Higgs accelerator



d.
Start Capacitor

Feedback

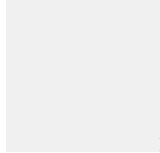
Your answer is incorrect.

The correct answer is: Electromagnetic induction

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In reference to motors, the transfer of energy from a magnetic field into a conductor is known as what?

Select one:



a.
electromagnetic induction



b.
Centrifugal force



c.
Inverse induction



d.
Synchronous phasing

Feedback

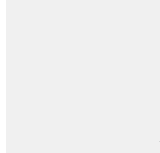
Your answer is correct.

The correct answer is: electromagnetic induction

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How many Watts of power would be the result of having 5 Amps being pushed by 120 Volts?

Select one:



a.
24



b.
360



c.
0.042



d.
600

Feedback

Your answer is correct.

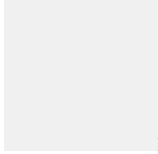
Power is measured in watts (volts x amps) and a minus voltage times a minus current equals a positive watt.

The correct answer is: 600

Question **4**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

The _____ is a series of stationary, conductive windings offset electrically at 120 degrees to initiate current flow.

Select one:



a.
Stator



b.
Inducer



c.
Motor



d.
Rotor

Feedback

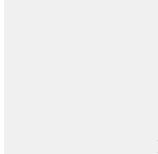
Your answer is incorrect.

The correct answer is: Stator

Question **5**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

The _____ is a series of conductive copper bars in high-grade silicon steel formed into a spinning drum.

Select one:



a.
Capacitor



b.
Rotor



c.
Stator



d.
Inducer

Feedback

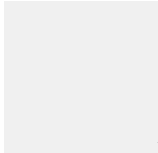
Your answer is incorrect.

The correct answer is: Rotor

Question **6**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The rate of the rotating magnetic field in the stator is called the _____ speed.

Select one:



a.
Synchronous



b.
Adjustable



c.
Slip



d.
Variable

Feedback

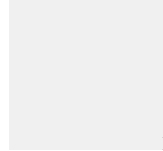
Your answer is correct.

The correct answer is: Synchronous

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

_____ is measured as a percentage difference between the synchronous and rated speed.

Select one:



a.
Slip



b.
Torque



c.
RPM



d.
Shift

Feedback

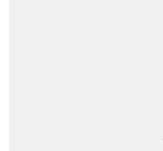
Your answer is correct.

The correct answer is: Slip

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Match the following with the best description of the motor application.

Can be programmed at any time to do whatever job is required.

Answer 1

VFD Motor

Typically programmed for a single purpose at the factory.

Answer 2

ECM Motor

Feedback

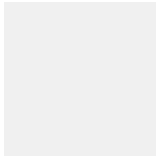
Your answer is correct.

The correct answer is: Can be programmed at any time to do whatever job is required. → VFD Motor, Typically programmed for a single purpose at the factory. → ECM Motor

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following motors has the ability to convert an AC voltage to DC voltage for its operation?



a.
Split capacitor



b.
Single phase induction



c.
Shaded pole



d.
ECM

Feedback

Your answer is correct.

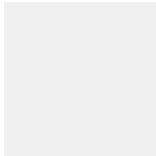
The correct answer is:

ECM

Question 10

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

The three-phase power curve consists of three separate single-phase curves evenly separated. How far apart are these curves spaced?



a.
45 degrees



b.
120 degrees



c.
90 degrees



d.
60 degrees

Feedback

Your answer is incorrect.

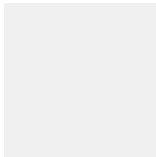
The correct answer is:

120 degrees

Question 11

Correct

Mark 1.00 out of 1.00



Flag question

Question text

For the same size, the single-phase induction motors develop about _____% of the output as that of three-phase induction motors.



a.
60



b.
75



c.
50



d.
30

Feedback

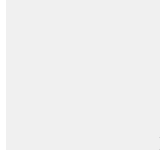
Your answer is correct.

The correct answer is:
50

Question 12

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Identify the image shown.



a.
Modified DC



b.
Rectified DC



c.
Modified AC



d.
Filtered DC

Feedback

Your answer is incorrect.

The correct answer is:
Filtered DC

Which of the following is a common type of single-phase motor?



a.
Multi-phase motor



b.
Induction motor



c.
Synchronous motor



d.
AC-DC motor

Feedback

Your answer is incorrect.

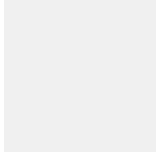
The correct answer is:

Induction motor

Question **2**

Correct

Mark 1.0 out of 1.0



Flag question

Question text

What is the starting method commonly used for single-phase motors?



a.

Delta starter



b.

ECM



c.

Capacitor start



d.

VFD

Feedback

Your answer is correct.

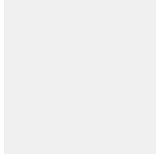
The correct answer is:

Capacitor start

Question **3**

Correct

Mark 1.0 out of 1.0



Flag question

Question text

In a split-phase single-phase motor, what is the purpose of the auxiliary winding?



a.

To provide a phase shift for starting



b.

To reverse the direction of rotation



c.

To increase the voltage



d.

To regulate the speed

Feedback

Your answer is correct.

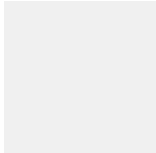
The correct answer is:

To provide a phase shift for starting

Question **4**

Correct

Mark 1.0 out of 1.0



Flag question

Question text

Which of the following would be a typical application of a shaded-pole single-phase motor?



a.
E-vehicles



b.
Industrial pumps



c.
High-torque applications



d.
Residential HVAC Fan

Feedback

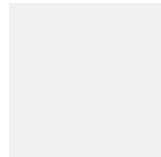
Your answer is correct.

The correct answer is:
Residential HVAC Fan

Question 5

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

What is the purpose of a run capacitor in a capacitor-start, capacitor-run single-phase motor?



a.
To reverse the motor direction as a result of a phase shift



b.
To improve the power factor



c.
To help start the motor



d.
To provide additional torque during running

Feedback

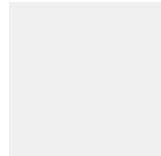
Your answer is incorrect.

The correct answer is:
To provide additional torque during running

Question 6

Correct

Mark 1.0 out of 1.0



Flag question

Question text

What is the purpose of the centrifugal switch in a split-phase single-phase motor?



a.
To control the torque



b.
To regulate the voltage



c.
To disconnect the start winding once running



d.
To control the speed

Feedback

Your answer is correct.

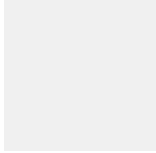
The correct answer is:

To disconnect the start winding once running

Question 7

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

Which component is responsible for creating a rotating magnetic field in a single-phase induction motor?



a.
Rotor



b.
Capacitor



c.
Commutator



d.
Stator

Feedback

Your answer is incorrect.

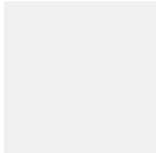
The correct answer is:

Stator

Question 8

Correct

Mark 1.0 out of 1.0



Flag question

Question text

What is the primary disadvantage of a split-phase motor?



a.
Time varying frequencies



b.
Inefficient operation



c.
Low starting torque



d.
Limited speed control

Feedback

Your answer is correct.

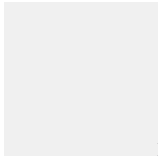
The correct answer is:

Low starting torque

Question 9

Correct

Mark 1.0 out of 1.0



Flag question

Question text

In a 3-phase motor, what is the phase angle between the voltages of each phase?



a.
60 degrees



b.
180 degrees



c.
120 degrees



d.
90 degrees

Feedback

Your answer is correct.

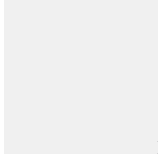
The correct answer is:

120 degrees

Question **10**

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

In a 3-phase motor, how is the direction of rotation reversed?



a.
By changing the voltage



b.
By changing the frequency



c.
By reversing the stator windings



d.
By switching any two phase connections

Feedback

Your answer is incorrect.

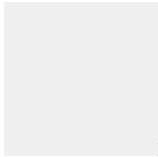
The correct answer is:

By switching any two phase connections

Question **11**

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

What is the significance of the term "*slip*" in a 3-phase induction motor?



a.
It refers to the rotor slipping out of position



b.

It is the difference between synchronous speed and rotor speed



c.

It indicates a fault in the stator windings



d.

It measures the efficiency of the motor

Feedback

Your answer is incorrect.

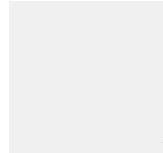
The correct answer is:

It is the difference between synchronous speed and rotor speed

Question 12

Correct

Mark 1.0 out of 1.0



Flag question

Question text

What happens to the torque in a 3-phase induction motor as the load increases?



a.

Decreases



b.

Remains constant



c.

Reverses direction



d.

Increases

Feedback

Your answer is correct.

The correct answer is:

Decreases

Electrical Circuits are opened or closed by the use of a _____?

Select one:



a.

Power source



b.

Transformer



c.

Switch



d.

Motor

Feedback

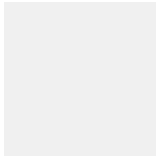
Your answer is correct.

The correct answer is: Switch

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A switch that has one pole and one contact is known as _____?

Select one:



a.
4PDT



b.
SPST



c.
DPDT



d.
SPDT

Feedback

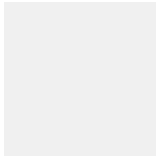
Your answer is correct.

The correct answer is: SPST

Question **3**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

If a pole can be thrown in one of two positions it is known as a _____?

Select one:



a.
SPDT



b.
Thermal switch



c.
DPDT



d.
Pressure Switch

Feedback

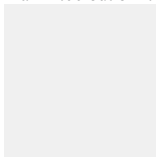
Your answer is incorrect.

The correct answer is: SPDT

Question **4**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

If a household electric appliance requires 240 volts to operate, how is that done?

Select one:



a.
By connecting to the 240 volt supply at the service panel



b.
Magic



c.
By connecting to a mechanically joined 120 volt supplies



d.
By plugging it in to a single gang box

Feedback

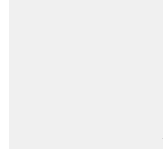
Your answer is correct.

The correct answer is: By connecting to a mechanically joined 120 volt supplies

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

All wiring diagrams are drawn to show circuits in what state?

Select one:



a.
Energized



b.
Closed



c.
Operating



d.
At Rest

Feedback

Your answer is correct.

The correct answer is: At Rest

What type of switch uses a concave or convex disk of metal to open or close contacts due to changes in temperature?

Select one:



a.
Flow Switch



b.
Pressure Switch



c.
Flame roll-out Switch



d.
Thermostat

Feedback

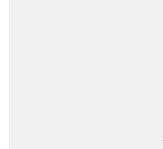
Your answer is correct.

The correct answer is: Flame roll-out Switch

Question 2

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

A type of switch that is constructed to close a set of contacts on a temperature rise, is an example of a _____?

Select one:



a.
High Limit Switch



b.
Flow Switch



c.
Fan Switch



d.
Aquastat

Feedback

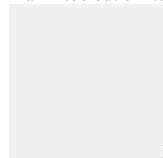
Your answer is incorrect.

The correct answer is: Fan Switch

Question **3**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of devices operate on the principle of different metals expanding at different rates, is commonly used in _____?

Select one:



a.
Light Switches



b.
Thermostats



c.
Pressure switches



d.
Thermometers

Feedback

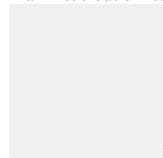
Your answer is correct.

The correct answer is: Thermostats

Question **4**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Thermostats use a type of liquid in a bulb to bridge two contacts and close circuits. What is the liquid used?

Select one:



a.
Mercury



b.
Condensate



c.
Silver



d.
H₂O

Feedback

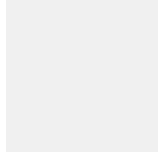
Your answer is correct.

The correct answer is: Mercury

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The rate of response in a thermostat can be improved by the addition of what component?

Select one:



a.
A Supplemental Thermostat



b.
A Heat Anticipator



c.
Electrical Connections



d.
Pressure Switches

Feedback

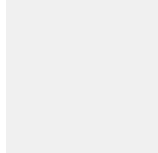
Your answer is correct.

The correct answer is: A Heat Anticipator

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The numbers on a heat anticipator are an indication of current draw in _____?

Select one:



a.
Volts



b.
Ohms



c.
Watts



d.
Amps

Feedback

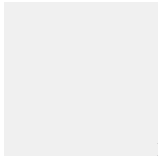
Your answer is correct.

The correct answer is: Amps

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The “R” Terminal in a thermostat is for what purpose?

Select one:



a.
Ground Connection



b.
Two stage Cooling



c.
Connection to the gas valve



d.
24 Volt supply

Feedback

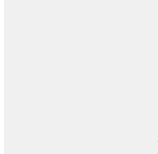
Your answer is correct.

The correct answer is: 24 Volt supply

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The process of following a set of variables and determining whether corrections need to be made is used in what type of equipment?

Select one:



a.
A Liquid Crystal Display



b.
A Manual Thermostat



c.
A Motor



d.
A Programmable Thermostat

Feedback

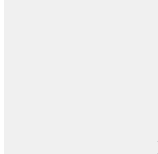
Your answer is correct.

The correct answer is: A Programmable Thermostat

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Residential heat pump thermostats have a terminals to energize _____ when is cooling mode.

Select one:



a.
The Reversing Valve



b.
The Ammonia Proportioner



c.
The Tridicator



d.
The Absorption Pump

Feedback

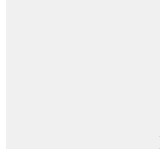
Your answer is correct.

The correct answer is: The Reversing Valve

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In a heat pump thermostat the second stage heating contact controls _____?

Select one:



a.
The limit control



b.
The operation of supplemental heat



c.
The refrigeration cycle



d.
The cooling mode

Feedback

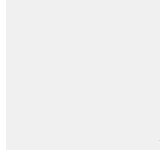
Your answer is correct.

The correct answer is: The operation of supplemental heat

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How can a programmable thermostat be overridden in run mode?

Select one:



a.
By adjusting the mechanical linkage



b.
By changing the wiring



c.
By depressing the + or – button on the control



d.
By taking the unit off the wall

Feedback

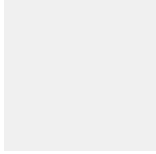
Your answer is correct.

The correct answer is: By depressing the + or – button on the control

Question 12

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Programmable thermostats typically have how many preset schedule types?

Select one:



a.

4



b.

3



c.

2



d.

1

Feedback

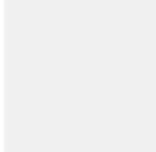
Your answer is correct.

The correct answer is: 4

Question 13

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What type of thermostat uses a type of gas between two metallic disks?

Select one:



a.

Gas thermostat



b.

Bellows Thermostat



c.

Metallic disk type thermostat



d.

Link and level thermostat

Feedback

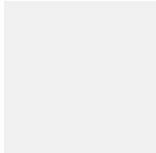
Your answer is incorrect.

The correct answer is: Bellows Thermostat

Question 14

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

In a combination Fan/ High limit control the fan switch is located on which side of the unit, if looking at the face.

Select one:



a.
Top



b.
Right Side



c.
Bottom



d.
Left side

Feedback

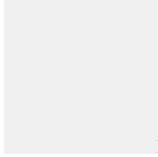
Your answer is incorrect.

The correct answer is: Left side

Question 15

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In the combination Fan/ High limit control why would a gas fitter need to remove the brass jumper?

Select one:



a.
To attach a manual switch to the high limit



b.
To supply the high limit with 24 volt power



c.
It is recommended to do so



d.
To supply the fan switch with 24 volt power

Feedback

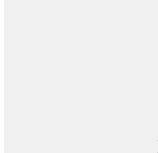
Your answer is correct.

The correct answer is: To supply the high limit with 24 volt power

Question 16

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Aquastats are used in what type of appliance?

Select one:



a.
Heat Pumps



b.
Hot Water Boilers



c.
Thermostats



d.

Furnaces

Feedback

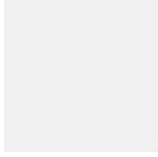
Your answer is correct.

The correct answer is: Hot Water Boilers

Question **17**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What are the methods for mounting aquastats? (select all that apply)

Select one or more:

☐

a.

Remote Bulb

☐

b.

Glued in place

☒

c.

Tied with rope

☐

d.

Surface Mounted

☒

e.

Wired connection

☐

f.

Soldered in place

☒

g.

Direct mounted in an immersion well

Feedback

Your answer is incorrect.

The correct answers are: Remote Bulb, Surface Mounted, Direct mounted in an immersion well

Pressuretrols are used in what type of system?

Select one:

☒

a.

Furnaces

☒

b.

Hot water tanks

☒

c.

Water boiler systems

☒

d.

Steam Boiler systems

Feedback

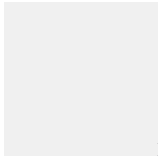
Your answer is incorrect.

The correct answer is: Steam Boiler systems

Question **2**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Another name for the piping (siphon loop) installed from the boiler to the pressuretrol and pressure gauge is called_____?

Select one:



a.
A pigtail



b.
A loop de loop



c.
A spool



d.
A pipe

Feedback

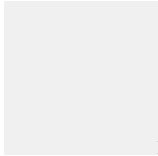
Your answer is correct.

The correct answer is: A pigtail

Question **3**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When a high limit pressuretrol reaches the set point limit, does the switch open or close its contacts?

Select one:



a.
Close



b.
Open

Feedback

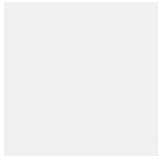
Your answer is correct.

The correct answer is: Open

Question **4**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

When burners systems operate with gas pressures that exceed 0.5 Psig what is required to be installed according to the CSA B149.3?

Select one:



a.
Temperature switches



b.
A manual shutoff



c.

Gas pressure switches



d.

Pressure gauge

Feedback

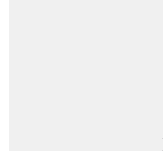
Your answer is incorrect.

The correct answer is: Gas pressure switches

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

According to the CSA B 149.3, if the pressure drops below 50% of the appliance regulator set point, the low pressure normally open switch is required to _____?

Select one:



a.

Open



b.

Remain energized



c.

Nothing is required



d.

Close

Feedback

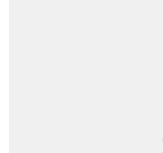
Your answer is correct.

The correct answer is: Open

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In general, an air proving switch is of what basic design?

Select one:



a.

A manually actuated push button



b.

A single pole



c.

A time delay switch



d.

A double pole

Feedback

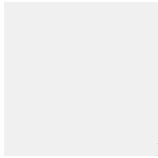
Your answer is correct.

The correct answer is: A single pole

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When the air supply is controlled mechanically, before ignition the blower must do what?

Select one:



a.

Pre purge the combustion chamber



b.

Drain the condensate



c.

Trip the high limit



d.

Nothing

Feedback

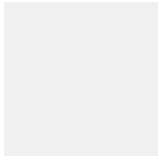
Your answer is correct.

The correct answer is: Pre purge the combustion chamber

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of switch does the image show?

Select one:



a.

Double pole switch



b.

Flow switch



c.

Normally closed pressure switch



d.

Normally open pressure switch

Feedback

Your answer is correct.

The correct answer is: Normally closed pressure switch

What are two types of L.W.C.O. switches?

Select one:



a.

Fan switch and Probe type



b.
Float type and Cold Water type



c.
Steam type and Hot water type



d.
Float type and Probe type

Feedback

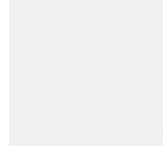
Your answer is correct.

The correct answer is: Float type and Probe type

Question 2

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

In conjunction with steam boilers how many automatic low water cut offs must be installed?

Select one:



a.
2



b.
3



c.
4



d.
None

Feedback

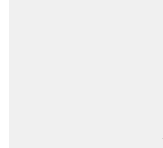
Your answer is incorrect.

The correct answer is: 2

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

If a low water cutoff is attached to the boiler by pipe and fittings what must not be places upstream of the L.W.C.O?

Select one:



a.
PRV's



b.
Check valves



c.
Shutoff valves of any type



d.
Globe Valves

Feedback

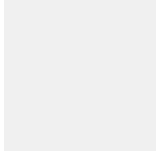
Your answer is correct.

The correct answer is: Shutoff valves of any type

Question 4

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

To facilitate cleaning of the lines with L.W.C.O.'s what shall be placed at every right angle turn?

Select one:



a.

A 90°



b.

Plugs



c.

A cross fitting



d.

A tee

Feedback

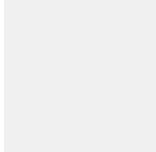
Your answer is incorrect.

The correct answer is: A cross fitting

Question 5

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

In a hot water heating boiler, the installed L.W.C.O. must be equipped with what device?

Select one:



a.

A manual reset switch



b.

An automatic reset



c.

A ball valve



d.

A pressure sensor

Feedback

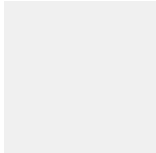
Your answer is incorrect.

The correct answer is: A manual reset switch

Question 6

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

At what height are L.W.C.O.'s designed to be installed, according to manufacturer's literature?

Select one:



a.
Above the highest safe water level



b.
Above the lowest safe water level



c.
Above the boiler



d.
Anywhere

Feedback

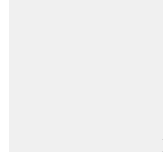
Your answer is incorrect.

The correct answer is: Above the lowest safe water level

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When attaching L.W.C.O.'s to a hot water boiler with pipe what is the minimum size of pipe that can be used?

Select one:



a.
3/4" NPS



b.
3" NPS



c.
1" NPS



d.
2" NPS

Feedback

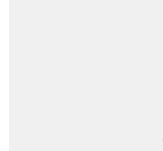
Your answer is correct.

The correct answer is: 1" NPS

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

When testing a L.W.C.O. in a hot water boiler install, does the system need to be drained?

Select one:



a.
Yes



b.
No

Feedback

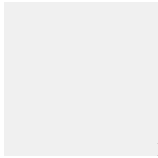
Your answer is incorrect.

The correct answer is: No

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What type of switch is indicated by the following symbol?

Select one:



a.
Normally open pressure switch



b.
Normally closed temperature switch



c.
Normally open float switch



d.
Normally closed float switch

Feedback

Your answer is correct.

The correct answer is: Normally open float switch

Can flow switches be used on water lines only?

Select one:



a.
Yes



b.
No



c.
Maybe



d.
Don't know

Feedback

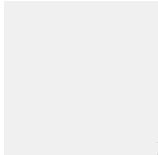
Your answer is correct.

The correct answer is: No

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A flow switch designed to sense air movement is known as?

Select one:



a.
A sail switch



b.
An air switch



c.
A boat switch



d.
A rudder switch

Feedback

Your answer is correct.

The correct answer is: A sail switch

How many contacts are on a SPDT switch?

Select one:



a.
none



b.
three



c.
Two



d.
One

Feedback

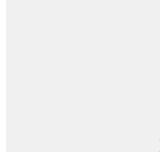
Your answer is incorrect.

The correct answer is: Two

Question 2

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Switches can be operated by hand or they can be activated in response to changes in :

Select one or more:



a.
Magnetism



b.
Temperature



c.
Color



d.
smell



e.
Pressure



f.
Fluid Movement



g.
Space

Feedback

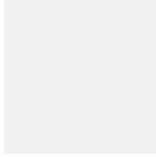
Your answer is incorrect.

The correct answers are: Temperature, Pressure, Fluid Movement, Magnetism

Question **3**

Partially correct

Mark 0.75 out of 1.00



Flag question

Question text

Select four switches that are activated in response to changes in temperature :

Select one or more:

☐

a.

Flow Switch

☐

b.

Pressure Switch

☐

c.

Flame Roll-out

☒

d.

High Limit Switch

☒

e.

Fan Switch

☒

f.

Thermostat Switch

☒

g.

Vacuum Switch

Feedback

Your answer is partially correct.

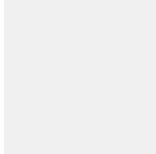
You have correctly selected 3.

The correct answers are: Thermostat Switch, Fan Switch, High Limit Switch, Flame Roll-out

Question **4**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the operating principle for bimetal switches?

Select one:

☐

a.

Different weight

☐

b.

Different density

☐

c.

Different melting points

☒

d.

Different coefficient of expansion

☐

e.

Different standard of conductivity

Feedback

Your answer is correct.

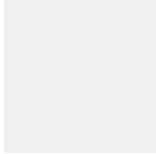
These devices use the warping action created when two dissimilar metals having different coefficients of expansion are joined together.

The correct answer is: Different coefficient of expansion

Question 5

Partially correct

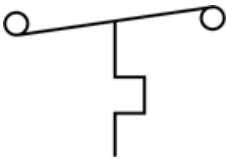
Mark 0.67 out of 1.00



Flag question

Question text

Complete the description of the switch illustrated below.



A normally switch that on a in temperature.

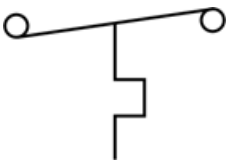
Feedback

Your answer is partially correct.

You have correctly selected 2.

The correct answer is:

Complete the description of the switch illustrated below.

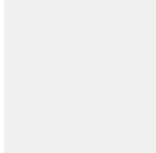


A normally [closed] switch that [opens] on a [rise] in temperature.

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Select the property a spiral bimetal strip uses in mechanical thermostat to tip the mercury and completes the circuit.

Select one:



a.
expansion and contraction



b.
elasticity



c.
malleability



d.
tensile strength



e.
conductivity



f.

density

Feedback

Your answer is correct.

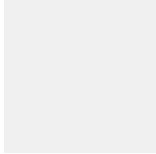
As the room cools, the bimetal strip contracts and moves the glass bulb. The mercury in the bulb engulfs the two contacts completing the circuit energizing the gas valve.

The correct answer is: expansion and contraction

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the purpose of a heat anticipator?

Select one:



a.

Avoid over-firing of the furnace



b.

Activate heating or cooling in fast temperature change situations



c.

Avoid overshooting room temperature



d.

Balance the temperature across heating zones

Feedback

Your answer is correct.

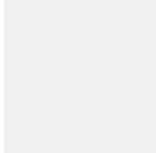
To reduce the response time of the thermostat and reduce overshooting of the room temperature ?

The correct answer is: Avoid overshooting room temperature

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What do the numbers on a heat anticipator indicate?

Select one:



a.

Amperage



b.

Temperature Range



c.

Millivoltage



d.

Voltage

Feedback

Your answer is incorrect.

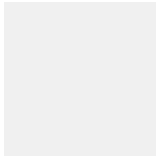
Amperage through the coil of the anticipator

The correct answer is: Amperage

Question 9

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

When is a heat anticipator energized?

Select one:



a.

Once the internal temperature reaches its set minimum



b.

Once the internal temperature reaches its set maximum



c.

When the thermostat open its contacts



d.

When the thermostat closes its contacts

Feedback

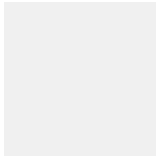
Your answer is incorrect.

The correct answer is: When the thermostat closes its contacts

Question **10**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Is a cooling anticipator wired in series or parallel to the thermostat?

Select one:



a.

Parallel



b.

Series



c.

Series and Parallel

Feedback

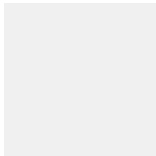
Your answer is incorrect.

The correct answer is: Parallel

Question **11**

Partially correct

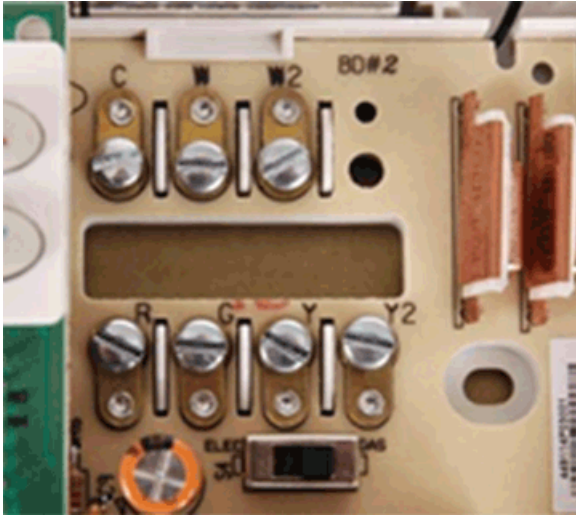
Mark 0.57 out of 1.00



Flag question

Question text

Identify the wiring terminals on the thermostat in the image with their purpose.



First stage cooling from the thermostat

Answer 1

Neutral from the thermostat to the transformer

Answer 2

First stage heating from the thermostat

Answer 3

Second stage cooling from the thermostat

Answer 4

Power from the thermostat to the fan motor relay

Answer 5

Second stage heating from the thermostat

Answer 6

Power supply to the thermostat

Answer 7

Feedback

Your answer is partially correct.

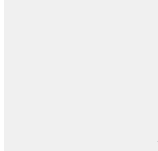
You have correctly selected 4.

The correct answer is: First stage cooling from the thermostat → Y, Neutral from the thermostat to the transformer → C, First stage heating from the thermostat → W, Second stage cooling from the thermostat → Y2, Power from the thermostat to the fan motor relay → G, Second stage heating from the thermostat → W2, Power supply to the thermostat → R

Question 12

Partially correct

Mark 2.00 out of 4.00



Flag question

Question text

Using the picture below please complete the following information.



90 degrees F = Answer

150 degrees F = Answer

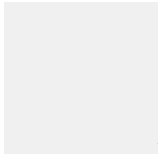
200 degrees F = Answer

Is there a summer switch on this unit? Answer

Question 13

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the purpose of an operating aquastat?

Select one:



a.
To maintain the boiler water temperature.



b.
To ensure the boiler water temperature does not drop below a set value.



c.
To ensure a consistent safe working pressure



d.
To ensure the boiler water temperature does not exceed a set value.

Feedback

Your answer is incorrect.

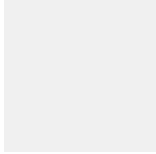
To maintain the boiler water temperature.

The correct answer is: To maintain the boiler water temperature.

Question 14

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the typical setting for a high limit aquastat?

Select one:



a.
200 °F (93 °C)



b.
250 °F (121 °C)



c.
180 °F (82 °C)



d.
140 °F (60 °C)

Feedback

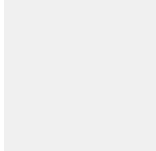
Your answer is correct.

The correct answer is: 200 °F (93 °C)

Question 15

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Below are the three mounting methods used for aquastats, which method uses an immersion well?

Remote Bulb

Surface Mounted (Strap-on)

Direct Mounted

Select one:



a.
All options use an immersion well



b.
Surface Mounted



c.
Direct Mounted



d.
Remote Bulb

Feedback

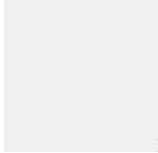
Your answer is incorrect.

The correct answer is: Direct Mounted

Question 16

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is usually applied to the inside of the immersion well prior to inserting the sensing bulb ?

Select one:



a.
Pipe dope



b.
Silicon gel



c.
Teflon paste



d.
Conductive Paste

Feedback

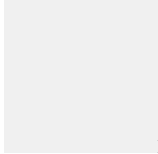
Your answer is incorrect.

The correct answer is: Conductive Paste

Question 17

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What term is used to describe a pressure switch that controls the operation of a steam boiler?

Answer

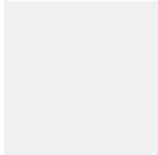
Feedback

The correct answer is: pressuretrol

Question 18

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Gas pressure switches are required to be installed on burner systems that exceed Answer psi according to the B149.3 gas code.

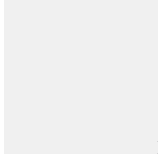
Feedback

The correct answer is: 0.5

Question 19

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How many sensing tubes would you expect to see on a pressure switch that is connected to a draft inducer fan serving a single stage conventional appliance?

Select one:



a.
1



b.
2



c.
3



d.
4

Feedback

Your answer is correct.

Draft inducer fan conventional appliance - one

Single stage condensing – two

Two stage – two pressure switches

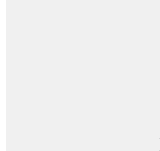
Modulating input – three pressure switches

The correct answer is: 1

Question 20

Partially correct

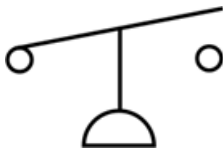
Mark 0.67 out of 1.00



Flag question

Question text

Complete the description of the switch illustrated below.



Normally pressure switch that on a in pressure.

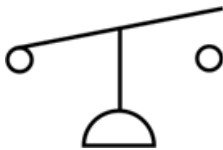
Feedback

Your answer is partially correct.

You have correctly selected 2.

The correct answer is:

Complete the description of the switch illustrated below.

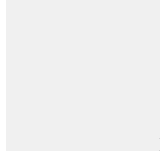


Normally pressure switch that on a in pressure.

Question 21

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are the two basic types of low water cut-offs?

Select one or more:



a.
Concentric



b.
Eccentric



c.

Probe

☐

d.

Sub-surface

☐

e.

Injector

☒

f.

Float

Feedback

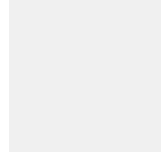
Your answer is correct.

The correct answers are: Float, Probe

Question **22**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Where would you find the low water cut-off located on a steam boiler?

Select one:

☐

a.

On the bottom of the boiler 2 inches above the low water level

☐

b.

Above the boiler

☐

c.

Not required on steam boilers

☒

d.

On the side of the boiler at the minimum water level

Feedback

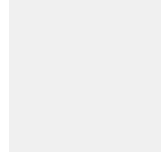
Your answer is correct.

The correct answer is: On the side of the boiler at the minimum water level

Question **23**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Identify the switch illustrated below :



Select one:



a.
Pressure Switch



b.
Temperature Switch



c.
Flow Switch



d.
Rocker Switch

Feedback

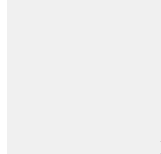
Your answer is incorrect.

The correct answer is: Flow Switch

Question 24

Correct

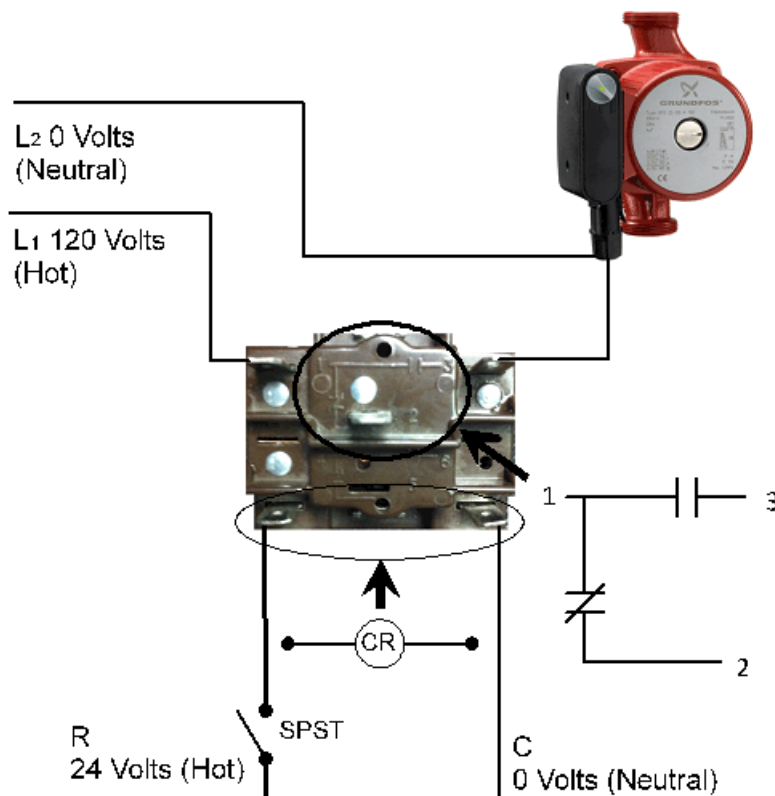
Mark 1.00 out of 1.00



Flag question

Question text

Referring to the illustration below, if the SPST switch contacts are closed, would the circulating pump be energized?



Select one:



Yes



No

Feedback

Your answer is correct.

Yes, the SPST switch will energize the relay coil and close the normally open contacts

The correct answer is: Yes

Question 25

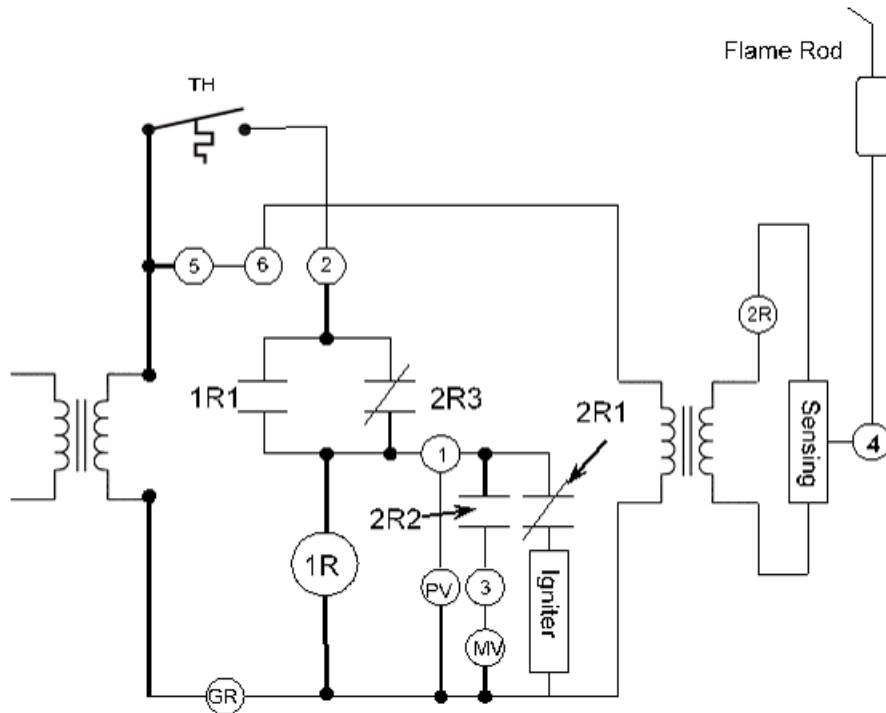
Incorrect

Mark 0.00 out of 1.00

Flag question

Question text

Referring to the illustration below, which contacts will be controlled by relay coil 2R?



Select one or more:

☐

a.
2R1

☐

b.
2R3

☒

c.
1R

☐

d.
2R2

☐

e.
1R1

Feedback

Your answer is incorrect.

2R1, 2R2 and 2R3

When the relay coil 2R is energized; 2R1 opens, 2R2 closes and 2R3 opens.

The correct answers are: 2R1, 2R2, 2R3

Question 26

Correct

Mark 1.00 out of 1.00

Flag question

Question text

Why would a contactor be used rather than a standard relay?

Select one:

☐

a.
Appliances over 250MBH



b.
Higher Amperage



c.
Lower Amperage



d.
Lower Voltage



e.
Higher Voltage

Feedback

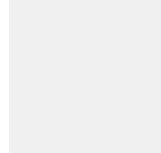
Your answer is correct.

The correct answer is: Higher Amperage

Question **27**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Why do vent dampers also include an end switch?

Select one:



a.
To prove the damper is fully open prior to igniting the burners



b.
To allow for a 30 second time delay.



c.
Signals the profile plates and allows time for them to adjust before the fan turns on.



d.
To prove the zone valve is fully open before the pump turns on.

Feedback

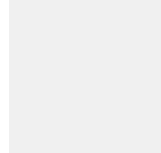
Your answer is correct.

The correct answer is: To prove the damper is fully open prior to igniting the burners

Question **28**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the most common voltage required for zone valve motors ?

Select one:



a.
20-30 millivolts



b.
250-750 millivolts



c.
240 volt



d.
24 volt

Feedback

Your answer is correct.

The correct answer is: 24 volt

Question 29

Correct
Mark 1.00 out of 1.00



Flag question

Question text

When the zone valve motor is energized does current immediately flow through the end switch?

Select one:



Yes



No

Feedback

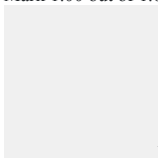
Your answer is correct.

No, the valve must be fully open to close the end switch.

The correct answer is: No

Question 30

Correct
Mark 1.00 out of 1.00



Flag question

Question text

What is the purpose of a transformer?

Select one:



a.
Decrease AC voltage



b.
Transform AC voltage to DC voltage



c.
Increase AC voltage



d.
Increase or Decrease AC voltage

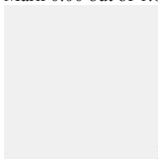
Feedback

Your answer is correct.

The correct answer is: Increase or Decrease AC voltage

Question 31

Incorrect
Mark 0.00 out of 1.00



Flag question

Question text

In a step down transformer the primary side will have windings when compared to the secondary side.

Feedback

Your answer is incorrect.

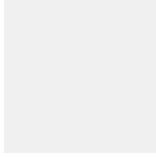
The correct answer is:

In a step down transformer the primary side will have [more] windings when compared to the secondary side.

Question **32**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What term is used to describe the process of generating electricity in the secondary winding's of a transformer?

Select one:



a.
Phase



b.
Conduction



c.
Induction



d.
Frequency

Feedback

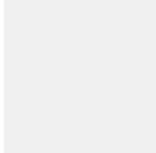
Your answer is correct.

The correct answer is: Induction

Question **33**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

A transformer would have multiple tapings for different or to create a number of different .

Feedback

Your answer is incorrect.

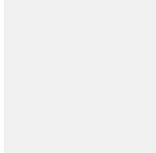
The correct answer is:

A transformer would have multiple tapings for different [voltages] or to create a number of different [voltages].

Question **34**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What would be the VA rating of a 120/24 volt transformer that is able to deliver 1.667 Amps?

VA = Answer

Feedback

VA (W) = $V \times A$

VA = $24\text{ V} \times 1.667\text{ A}$

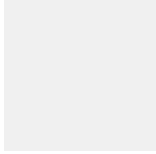
VA = 40

The correct answer is: 40.008

Question **35**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

How many 24 volt zone valves could be operated from a 120/24 volt transformer with a 40 VA rating if each zone valve required 0.32 Amps?

Answer:

Feedback

$$A = \frac{VA}{V} \quad A = \frac{VA}{V}$$

$$A = \frac{40VA}{24V} \quad A = \frac{40VA}{24V}$$

$$A = 1.667 \quad A = 1.667$$

$$1.667A \div 0.32A = 5.21$$

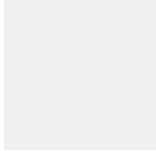
Therefore you could operate **5** 24volt zone valves.

The correct answer is: 5

Question **36**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Referring to the illustration below, this electrical symbol represents which one of the following electrical components?



Select one:



a.

A relay coil



b.

An adjustable capacitor



c.

A variable resistor



d.

A tapped transformer

Feedback

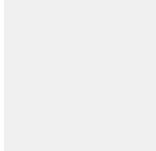
Your answer is incorrect.

The correct answer is: A variable resistor

Question **37**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which of the following is not a consideration when installing a new thermostat for a furnace?

Select one:



a.
The Btuh rating of the thermostat must match the Btuh rating of the furnace.



b.
The voltage designation of the thermostat must match the voltage of the control circuit.



c.
The thermostat must be installed in a location to ensure that it is monitoring the ambient house temperature.



d.
The amperage designation on the heat anticipator must be adjusted to the rating of the gas valve.

Feedback

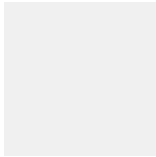
Your answer is correct.

The correct answer is: The Btuh rating of the thermostat must match the Btuh rating of the furnace.

Question **38**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

The furnace fan control contacts open when the circulating air :

Select one:



a.
cools down



b.
warms up



c.
starts flowing



d.
stops flowing

Feedback

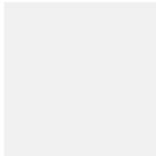
Your answer is incorrect.

The correct answer is: cools down

Question **39**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which of the following would be classified as a normally “open” switch?

Select one:



a.
High limit switch



b.
Flame roll-out switch



c.
Automatic fan switch



d.
High limit pressuretrol

Feedback

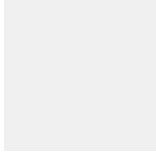
Your answer is incorrect.

The correct answer is: Automatic fan switch

Question **40**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The electrical symbol illustrated below represents which one of the following electrical components?



Select one:



a.

A circulating pump



b.

A relay coil



c.

A variable resistor



d.

A centrifugal switch

Feedback

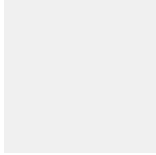
Your answer is correct.

The correct answer is: A relay coil

Question **41**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the typical fan-off setpoint for a combination high-limit/fan control?

Select one:



a.

150 °F (65 °C)



b.

200 °F (93 °C)



c.

20 °F (9°C) above the fan-on setpoint



d.

20 °F (9°C) above the thermostat setpoint

Feedback

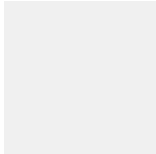
Your answer is incorrect.

The correct answer is: 20 °F (9°C) above the thermostat setpoint

Question **42**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the typical setting for a high limit aquastat ?

Select one:



a.
180 F



b.
250 F



c.
200 F



d.
140 F

Feedback

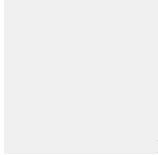
Your answer is correct.

The correct answer is: 200 F

Question **43**

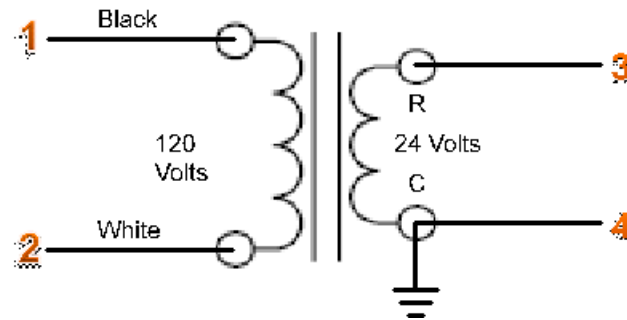
Incorrect

Mark 0.00 out of 1.00



Flag question

Question text



#1 and #3 = Answer

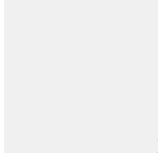
24

Volts

Question **44**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

#1 and #4 = Answer

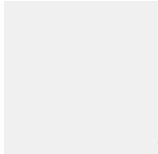
120

Volts

Question **45**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

96

#2 and #4 = Answer

Volts

What are the two components necessary for combustion safety circuit utilizing a standing pilot?

Select one:



a.

Thermopile



b.

High limit and fan switch



c.

Gas valve



d.

Thermocouple and a safety shutoff valve

Feedback

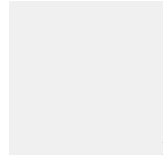
Your answer is correct.

The correct answer is: Thermocouple and a safety shutoff valve

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In the combustion safety circuit what is the purpose of a thermocouple?

Select one:



a.

Power supply



b.

Heat generator



c.

Limit switch



d.

POC Detector

Feedback

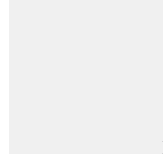
Your answer is correct.

The correct answer is: Power supply

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Approximately how many volts will a thermocouple generate?

Select one:



a.

40 – 50 millivolts



b.
20 – 30 volts



c.
20 – 30 millivolts



d.
25 – 45 volts

Feedback

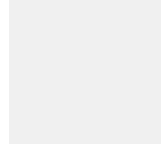
Your answer is correct.

The correct answer is: 20 – 30 millivolts

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A thermocouple is made of two dissimilar metals joined together at one end, what is the term used for that connection?

Select one:



a.
Cold junction



b.
Bimetal strip



c.
Hot junction



d.
Magnetic field

Feedback

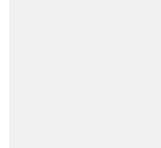
Your answer is correct.

The correct answer is: Hot junction

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In a thermocouple, the temperature difference between the hot junction and the cold junction produces the greatest amount of voltage, how much of the thermocouple's hot junction should be heated?

Select one:



a.
 $1/8'' - 3/8''$



b.
 $1/2'' - 3/4''$



c.
 $5/8'' - 1''$



d.
 $3/8'' - 1/2''$

Feedback

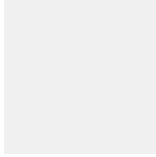
Your answer is correct.

The correct answer is: $3/8'' - 1/2''$

Question **6**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

According to the CSA B149.3 code, thermocouples are limited to combustion safety circuits that have standing pilots, and to what input BTU rating?

Select one:



a.
400 000 Btu



b.
1 000 000 Btu



c.
500 000 Btu



d.
1 200 000 Btu

Feedback

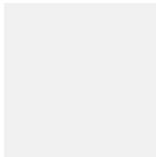
Your answer is incorrect.

The correct answer is: 400 000 Btu

Question **7**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Thermocouples used in low volume appliances in conjunction with a gas that has a specific gravity greater than 1.0, shall have a maximum flame failure response time of?

Select one:



a.
40 seconds



b.
90 seconds



c.
120 seconds



d.
20 seconds

Feedback

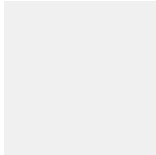
Your answer is correct.

The correct answer is: 20 seconds

Question **8**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Another type of device that operates similarly to a thermocouple is known as?

Select one:



a.
Pilot Flame



b.
DC Generator



c.
Thermocouple



d.
Pilot Generator

Feedback

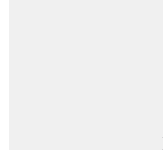
Your answer is correct.

The correct answer is: Pilot Generator

Question **9**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Thermopiles create enough voltage to supply power to the combustion safety circuit as well as?

Select one:



a.
The Transformer



b.
The Limiting Devices



c.
The Gas Valve



d.
The Control Circuit

Feedback

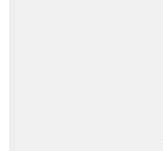
Your answer is correct.

The correct answer is: The Control Circuit

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In 100% safe systems, the valve shuts off the gas to both the main burner and the pilot burner. For non-100% (or 80%) safe systems the valve shuts off the gas to what device only.

Select one:



a.
Pilot Burner



b.
Gas Valve



c.

Main Burner



d.

The Meter

Feedback

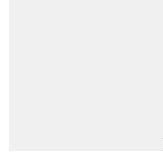
Your answer is correct.

The correct answer is: Main Burner

Question **11**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

An appliance with a flame sensor has an input greater than 120 KW what is the maximum FFRT (Flame Failure Response Time)?

Select one:



a.

4 seconds



b.

12 seconds



c.

90 seconds



d.

20 seconds

Feedback

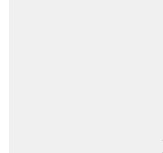
Your answer is incorrect.

The correct answer is: 4 seconds

Question **12**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the most common flame sensing device for appliances under 1,000,000 Btu?

Select one:



a.

Thermostat



b.

Thermometer



c.

Flame Rod



d.

Pyrometer

Feedback

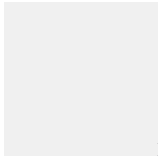
Your answer is correct.

The correct answer is: Flame Rod

Question **13**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Flame rods are typically made from what material?

Select one:



a.
Babbit alloys



b.
Brass alloys



c.
Kanthol and Globar alloys



d.
Kryptonite alloys

Feedback

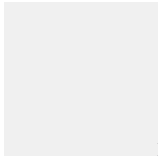
Your answer is correct.

The correct answer is: Kanthol and Globar alloys

Question **14**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is the current that is generally conducted through a flame?

Select one:



a.
2 - 4 kA



b.
2 – 4 A



c.
2 – 4 μ A



d.
2 – 4 mA

Feedback

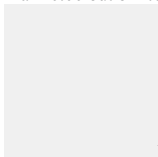
Your answer is incorrect.

The correct answer is: 2 – 4 μ A

Question **15**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Optical flame detectors are divided into three groups, the detection type that scans the visible light spectrum is known as?

Select one:



a.
Photo Cells



b.
Gas Filled Detection Tubes



c.
Light Detection Amalgam



d.
Lead Sulfide Cells

Feedback

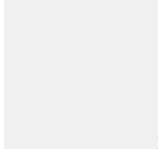
Your answer is incorrect.

The correct answer is: Photo Cells

Question 16

Correct

Mark 1.00 out of 1.00



Flag question

Question text

UV flame detectors respond to UV sources in a flame. However, it is possible for the detector to respond to other sources of UV radiation such as? (select all that apply)

Select one or more:



a.
Incandescent lights



b.
Halogen Lights



c.
Hot Refractory



d.
Grinding Sparks



e.
Flash Lights



f.
Welding Arcs



g.
Spark Ignition

Feedback

Your answer is correct.

The correct answers are: Hot Refractory, Spark Ignition, Welding Arcs, Halogen Lights

Control circuits can be broken down into three categories, devices in that circuit are known as operating control, safety controls, and _____?

Select one:



a.
Actuators



b.
Limits



c.
Pumps



d.

Switches

Feedback

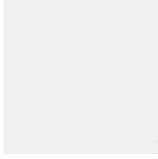
Your answer is correct.

The correct answer is: Actuators

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Operating controls have adjustable set points and some type of sensing element used to sense? (select all that apply)

Select one or more:



a.

Specific weight



b.

Color



c.

Temperature



d.

Density



e.

Pressure

Feedback

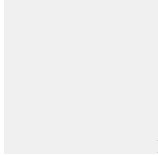
Your answer is correct.

The correct answers are: Temperature, Pressure

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Safety switches are designed to shut off what device if there is an unsafe condition present?

Select one:



a.

The Appliance Power Supply



b.

The Fan or Pump



c.

The Gas Valve



d.

The Control Board

Feedback

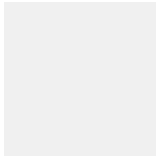
Your answer is correct.

The correct answer is: The Gas Valve

Question 4

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

In a gas dryer which device would be considered and safety limit?

Select one:



a.
Door Switch



b.
Gas Valve



c.
Thermostat



d.
AquaStat

Feedback

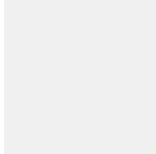
Your answer is incorrect.

The correct answer is: Door Switch

Question **5**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

For an intermittent pilot system, if the control module sensed an overheating condition and the high limit opened its contacts, what would be de-energized?

Select one:



a.
The Gas Valve



b.
The Control board



c.
The Thermostat



d.
The Transformer

Feedback

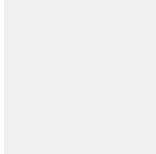
Your answer is incorrect.

The correct answer is: The Transformer

Question **6**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Control modules with electronic ignition were designed to facilitate the operation of appliances where access was difficult, or where frequent pilot outages would occur because of _____?

Select one:



a.

Wind



b.
Sun



c.
Clouds



d.
Rain

Feedback

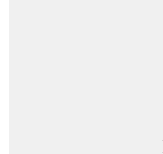
Your answer is correct.

The correct answer is: Wind

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

On most appliances that use a DSI, the ignition module will go into lock-out mode after _____ attempts to detect a flame.

Select one:



a.
5



b.
2



c.
3



d.
4

Feedback

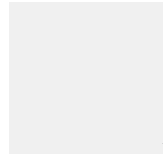
Your answer is correct.

The correct answer is: 3

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A HSI has an element that is made from what material?

Select one:



a.
Carbon Tetrasulphate



b.
Silicon Carbide



c.
Tetrasodium Pyrophosphate



d.
Polychloroprene

Feedback

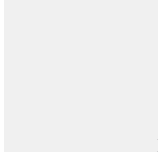
Your answer is correct.

The correct answer is: Silicon Carbide

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the most common reason for failure of an HSI's?

Select one:



a.

It is improperly connected.



b.

It is covered in soot.



c.

It is wet.



d.

It is cracked.

Feedback

Your answer is correct.

The correct answer is: It is cracked.

In a forced air furnace the fan's operation can be controlled by what? (select all that apply)

Select one or more:



a.

Flow sensing Switches



b.

Timer actuated switches



c.

Temperature-actuated switches



d.

Motor rotation sensors



e.

Pressure sensing Switches

Feedback

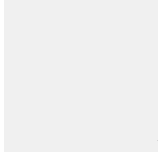
Your answer is correct.

The correct answers are: Temperature-actuated switches, Timer actuated switches

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The difference in temperature between the fan-on and fan-off setting is called?

Select one:



a.

The fan sensor



b.
The vent differential



c.
The controller



d.
The fan control differential

Feedback

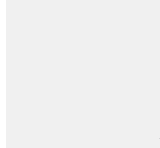
Your answer is correct.

The correct answer is: The fan control differential

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When replacing temperature-activated switches it is recommended that the switches be reinstalled in what location?

Select one:



a.
Near the outlet of the fan



b.
Near the heat exchanger



c.
Near the gas valve



d.
Near the bottom of the unit

Feedback

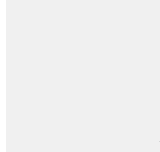
Your answer is correct.

The correct answer is: Near the heat exchanger

Question 4

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Using a timer actuated heat on and heat off fan switch, delays can be adjusted, it is recommended that these switches be set initially to what timing?

Select one:



a.
30 sec Heat On, 60 Sec Heat Off



b.
Factory Setting



c.
45 sec Heat On, 60 Sec Heat Off



d.
15 sec Heat On, 90 Sec Heat Off

Feedback

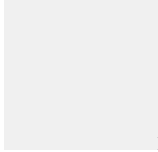
Your answer is correct.

The correct answer is: Factory Setting

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are three classifications of furnaces?

Select one or more:



a.

High Boy



b.

Low flow



c.

Horizontal



d.

Counter-flow



e.

CFM



f.

Up draft



g.

Low Boy



h.

Vertical

Feedback

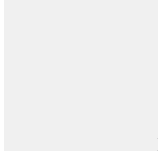
Your answer is correct.

The correct answers are: High Boy, Low Boy, Horizontal

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Furnaces that utilize mono-port inshot burners can be installed in what orientation?

Select one:



a.

Any of the options



b.

Up flow



c.

Down flow



d.

Horizontal right



e.

Horizontal left

Feedback

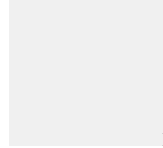
Your answer is correct.

The correct answer is: Any of the options

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The difference in temperature between the air entering the blower chamber from the cold air return plenum and the hot air leaving the supply plenum is the definition of _____?

Select one:



a.

Delta T



b.

Design Temperature



c.

Temperature Rise



d.

Temperature Difference

Feedback

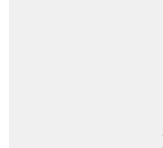
Your answer is correct.

The correct answer is: Temperature Rise

Question 8

Correct

Mark 1.00 out of 1.00



Flag question

Question text

To determine temperature rise in a furnace it is recommended that a hole be drilled in the supply and return plenums to accommodate a thermometer.

Select one:



a.

True



b.

False

Feedback

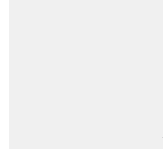
Your answer is correct.

The correct answer is: True

Question 9

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Temperature rise is controlled by the fan speed, to reduce the temperature rise the fan speed must be _____?

Select one:



a.
Decreased



b.
Increased



c.
Factory set



d.
No adjustment is possible

Feedback

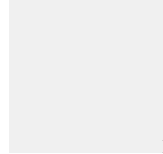
Your answer is incorrect.

The correct answer is: Increased

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Fan motors are of two types' _____ and _____?

Select one or more:



a.
Geared



b.
Belt Drive



c.
Indirect Drive



d.
Direct Drive

Feedback

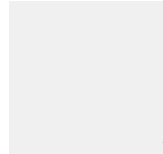
Your answer is correct.

The correct answers are: Direct Drive, Belt Drive

Question **11**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Wiring for a multi speed fan motor in high speed is accomplished in general by connecting the _____ wire.

Select one:



a.
Brown



b.
Red



c.

Black



d.

White

Feedback

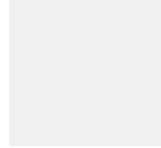
Your answer is incorrect.

The correct answer is: Black

Question 12

Correct

Mark 1.00 out of 1.00



Flag question

Question text

ESP is the abbreviation for?

Select one:



a.

Extra Sensory Perception



b.

Excess to Supply Plenum



c.

Extra Speeds Possible



d.

External Static Pressure

Feedback

Your answer is correct.

The correct answer is: External Static Pressure

elect the correct order for the sequence of operation for a furnace utilizing a standing pilot:

- The automatic gas valve opens

- When the call for heat is satisfied, the thermostat opens its contacts de-energizing the gas valve.

- The thermostat calls for heat

- Once the heat exchanger cools to the fan-off setpoint, the fan motor is de-energized

- When the heat exchanger reaches the fan-on setpoint the fan motor is energized

Feedback

Your answer is correct.

The correct answer is:

Select the correct order for the sequence of operation for a furnace utilizing a standing pilot:

[2] - The automatic gas valve opens

[4] - When the call for heat is satisfied, the thermostat opens its contacts de-energizing the gas valve.

[1] - The thermostat calls for heat

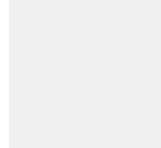
[5] - Once the heat exchanger cools to the fan-off setpoint, the fan motor is de-energized

[3] - When the heat exchanger reaches the fan-on setpoint the fan motor is energized

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the primary purpose of a combustion safety circuit?

Select one:



a.

To detect the presence or absence of a flame



b.

To ensure proper gas flow to the burner



c.

To ensure proper air flow to the combustion chamber



d.

To check for complete or incomplete combustion

Feedback

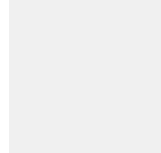
Your answer is correct.

The correct answer is: To detect the presence or absence of a flame

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

How does a thermocouple generate electricity?

Two metals are joined at one end called the junction. When heat is applied electricity is created.

Feedback

Your answer is correct.

The correct answer is:

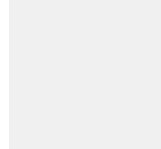
How does a thermocouple generate electricity?

Two [dissimilar] metals are joined at one end called the [hot] junction. When heat is applied electricity is created.

Question 4

Partially correct

Mark 0.50 out of 1.00



Flag question

Question text

Select all that apply in reference to a 100% and an 80% combustion safety circuit:

Select one or more:



a.

A 100% safe system cuts off the supply to both the pilot and the main burner



b.

An 80% safe system cuts off the supply to both the pilot and the main burner



c.

A 100% safe system cuts off the supply to the pilot but not the main burner



d.

An 80% safe system cuts off the supply to the main burner but not the pilot

Feedback

Your answer is partially correct.

You have correctly selected 1.

100% safe combustion safety circuit.

During pilot outage the gas supply is terminated to both the main burner and the pilot burner.

80% safe combustion safety circuit.

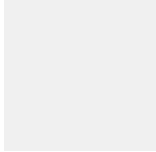
During pilot outage the gas supply is terminated to the main burner only.

The correct answers are: A 100% safe system cuts off the supply to both the pilot and the main burner, An 80% safe system cuts off the supply to the main burner but not the pilot

Question 5

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the maximum flame failure response time (FFRT) in seconds for an appliance with an input of 400,000 Btuh (120 kW) or less, fired on natural gas?

Select one:



a.
30



b.
90



c.
60



d.
120

Feedback

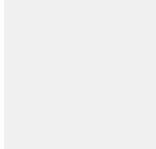
Your answer is correct.

The correct answer is: 90

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the maximum FFRT in seconds for an appliance with an input greater than 400,000 Btuh (120 kW) ?

Select one:



a.
6



b.
4



c.
8



d.
30



e.
60



f.
5

Feedback

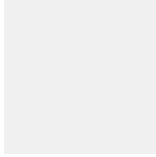
Your answer is correct.

The correct answer is: 4

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Why would a thermopile be used rather than a thermocouple ?

Select one:



a.

To provide a higher level of protection.



b.

To provide power to the damper motor as well as the combustion safety circuit.



c.

To not only power the combustion safety circuit but also the control circuit



d.

When used in conjunction with a hot surface igniter.

Feedback

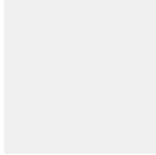
Your answer is correct.

The correct answer is: To not only power the combustion safety circuit but also the control circuit

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which flame safeguards are used for appliances that have electronic ignition systems?

Select one or more:



a.

HSI



b.

Thermocouples



c.

Flame rods



d.

Thermopiles



e.

DSI



f.

Optical detectors

Feedback

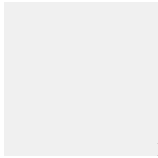
Your answer is incorrect.

The correct answers are: Flame rods, Optical detectors

Question 9

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Which is the most common flame safeguard encountered in appliances with inputs less than 1,000 MBH (293 kW) that have electronic ignition systems?

Select one:



a.
Thermocouples



b.
Optical detectors



c.
Flame rods



d.
Thermopiles

Feedback

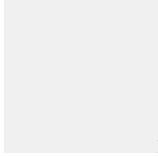
Your answer is incorrect.

The correct answer is: Flame rods

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Flame rods are typically made of which materials?

Select one or more:



a.
Refractory



b.
Sodium bicarbonate



c.
Silicon iron



d.
Globar



e.
Silver



f.
Kanthol

Feedback

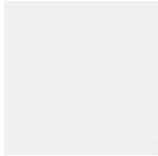
Your answer is correct.

The correct answers are: Kanthol, Globar

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the anticipated current through a flame rod ?

Select one:



a.
1 - 2 micro-amps



b.
4 - 6 micro-amps



c.
2 –4 micro-amps



d.
6 - 8 micro-amps

Feedback

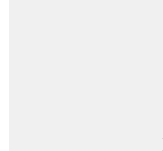
Your answer is correct.

The correct answer is: 2 –4 micro-amps

Question 12

Partially correct

Mark 0.33 out of 1.00



Flag question

Question text

What are the three types of optical flame detectors used on gas equipment and which part of the flame spectrum do they sense?

Select one or more:



a.
Photocells - Visible light



b.
Lead Sulphide (PbS) Cells - Ultraviolet light



c.
Lead Sulphide (PbS) Cells - Infrared light



d.
Photocells - Ultraviolet light



e.
UV Detectors - Ultraviolet light

Feedback

Your answer is partially correct.

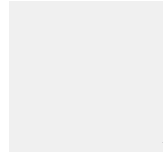
You have correctly selected 1.

The correct answers are: UV Detectors - Ultraviolet light, Photocells - Visible light, Lead Sulphide (PbS) Cells - Infrared light

Question 13

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the minimum difference in area between the grounding electrode and the flame rod in order for a flame rectification system to function?

Select one:



a.
2 : 1



b.
4 : 1



c.
10 : 1



d.
6 : 1

Feedback

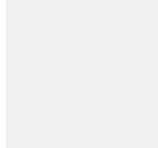
Your answer is correct.

The correct answer is: 4 : 1

Question 14

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What is meant by the term "Flame Flicker Frequency"?

Select one:



a.
A small amount of electricity produced by the flames movement.



b.
The cycle frequency of small explosions of fuel and oxygen.



c.
A flames characteristic that mimics sound frequency.



d.
A way of measuring the amount of times an appliance turns on and off in one 24 hour period.

Feedback

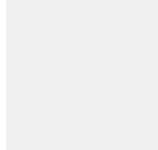
Your answer is incorrect.

The correct answer is: The cycle frequency of small explosions of fuel and oxygen.

Question 15

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which part of a gas flame emits the highest percentage of ultraviolet radiation?

Select one:



a.
Last 1/3 of the flame



b.
Second 1/3 of the flame



c.
The entire flame



d.
First 1/3 of the flame

Feedback

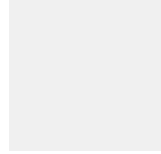
Your answer is correct.

The correct answer is: First 1/3 of the flame

Question 16

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Please match the following statements with the proper name.

controls have an adjustable setpoint and contain a sensing element and a switch that responds to changes in the medium being sensed and makes or breaks the control circuit.

controls shutoff the gas valve if continued operation would cause an unsafe condition.

Feedback

Your answer is correct.

The correct answer is:

Please match the following statements with the proper name.

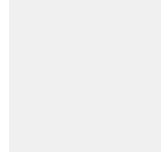
[Operating] controls have an adjustable setpoint and contain a sensing element and a switch that responds to changes in the medium being sensed and makes or breaks the control circuit.

[Limit] controls shutoff the gas valve if continued operation would cause an unsafe condition.

Question 17

Incorrect

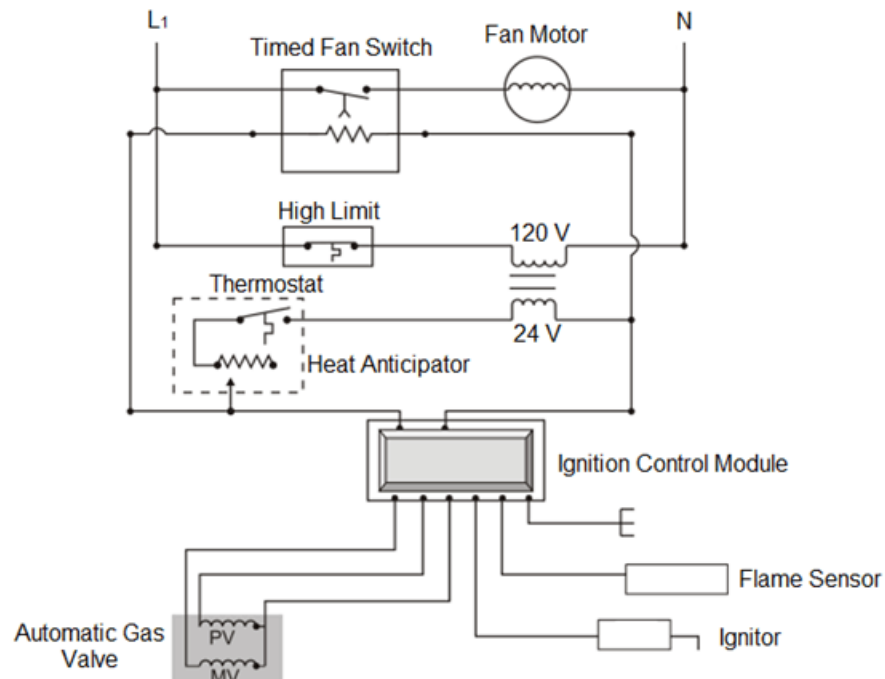
Mark 0.00 out of 1.00



Flag question

Question text

Referring to the diagram below, identify the operating control and the limit control.



The is the operating control.

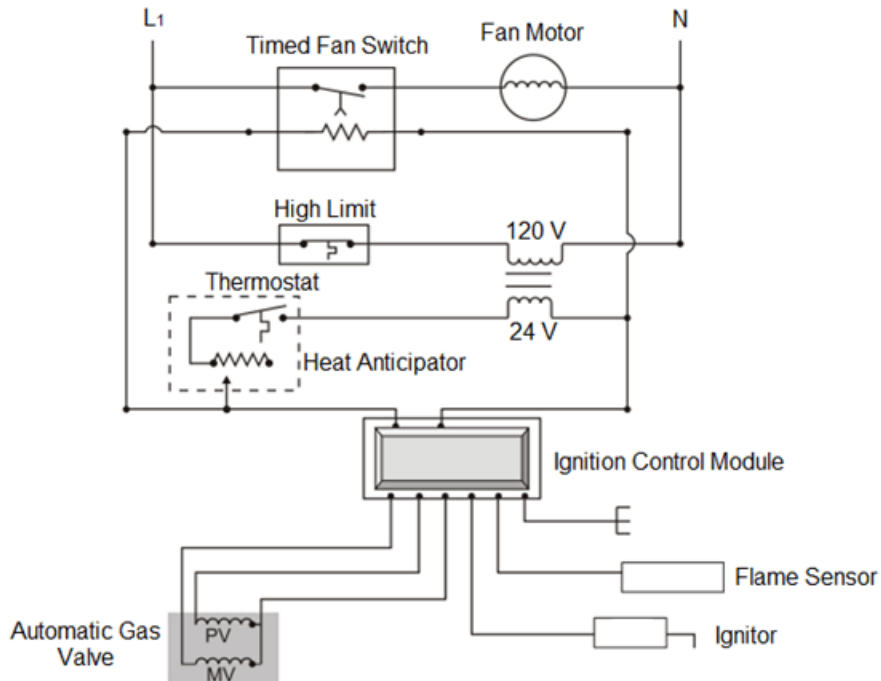
The is the limit control.

Feedback

Your answer is incorrect.

The correct answer is:

Referring to the diagram below, identify the operating control and the limit control.



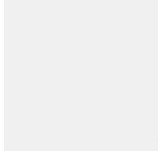
The [Thermostat] is the operating control.

The [High Limit] is the limit control.

Question 18

Partially correct

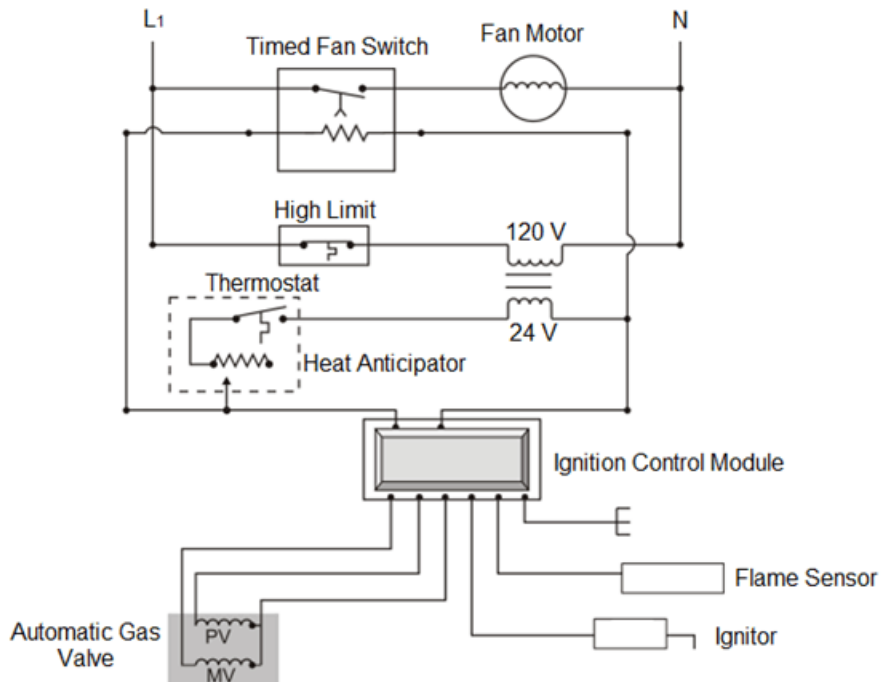
Mark 0.17 out of 1.00



Flag question

Question text

List the sequence of operation for the diagram below:



1.

24 V travels through the heat anticipator and powers the ignition control module and the fan switch time delay relay coil.
2.

The thermostat calls for heat
3.

The flame sensor detects the pilot flame
4.

The main valve is energized and the main burner is ignited by the pilot flame
5.

The ignition control module powers the igniter and pilot valve
6.

When the time delay relay completes its cycle the fan motor is energized

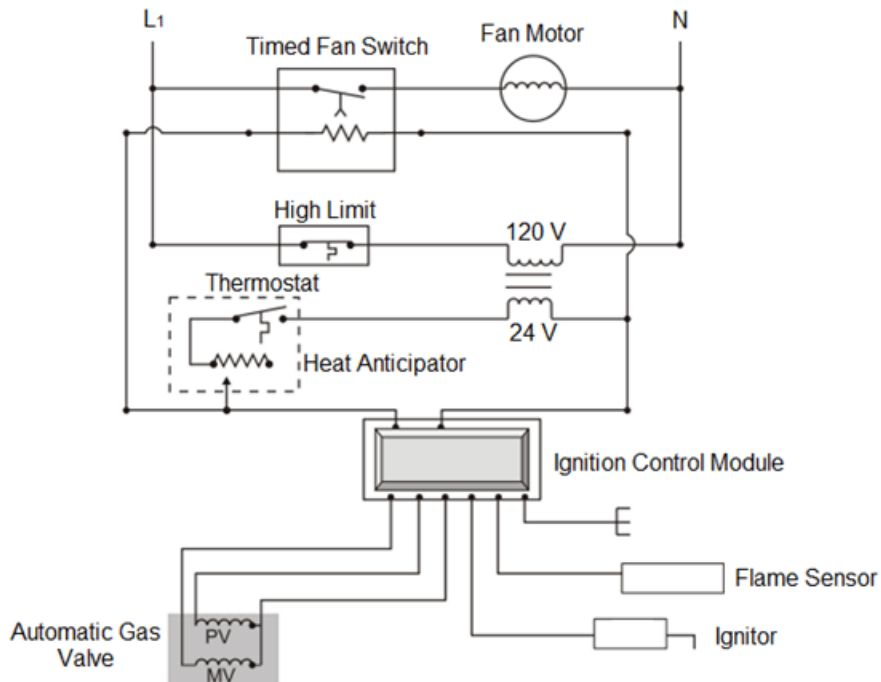
Feedback

Your answer is partially correct.

You have correctly selected 1.

The correct answer is:

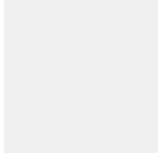
List the sequence of operation for the diagram below:



1. [The thermostat calls for heat]
2. [24 V travels through the heat anticipator and powers the ignition control module and the fan switch time delay relay coil.]
3. [The ignition control module powers the igniter and pilot valve]
4. [The flame sensor detects the pilot flame]
5. [The main valve is energized and the main burner is ignited by the pilot flame]
6. [When the time delay relay completes its cycle the fan motor is energized]

Question 19

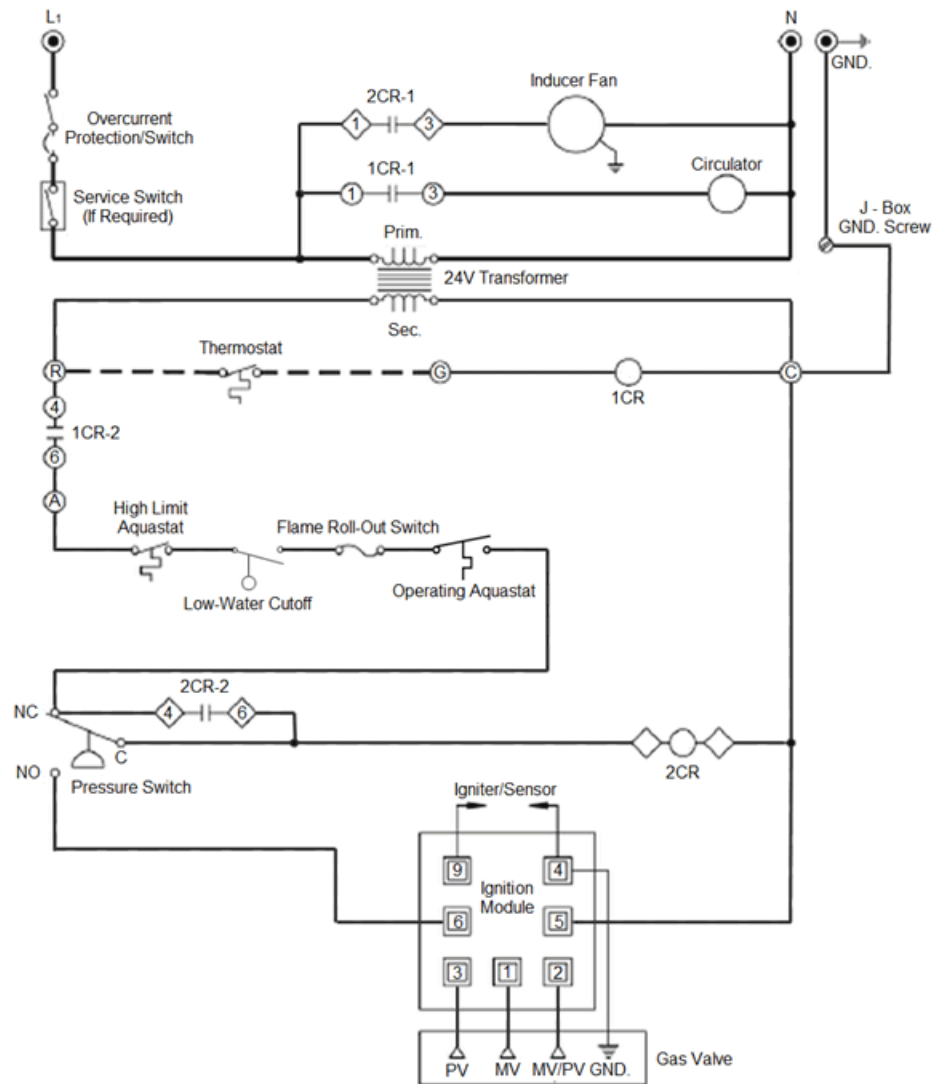
Partially correct
Mark 0.60 out of 1.00



Flag question

Question text

List the sequence of operation for the diagram below:



- When the thermostat closes its contacts, relay coil 1CR is energized
- Provided that the high limit aquastat, low water cut-off and flame rollout switches are closed, the operating aquastat will close its contacts on a drop in water temperature allowing current to flow through the pressure switch to relay coil 2CR.
- 1CR-1 contacts close energizing the circulator.
- 1CR-2 contacts close energizing the control circuit.
- 2CR-1 contacts close energizing the inducer fan.

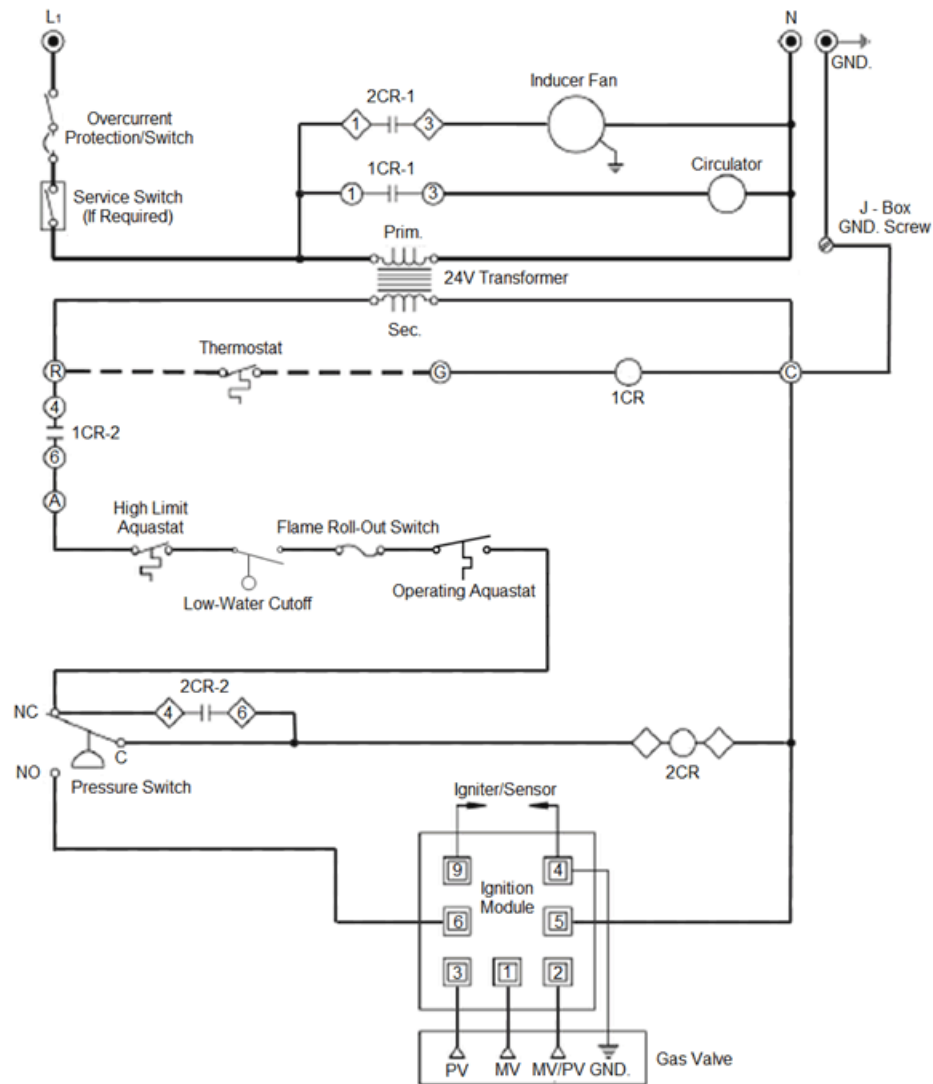
Feedback

Your answer is partially correct.

You have correctly selected 3.

The correct answer is:

List the sequence of operation for the diagram below:



[1] - When the thermostat closes its contacts, relay coil 1CR is energized

[4] - Provided that the high limit aquastat, low water cut-off and flame rollout switches are closed, the operating aquastat will close its contacts on a drop in water temperature allowing current to flow through the pressure switch to relay coil 2CR.

[2] - 1CR-1 contacts close energizing the circulator.

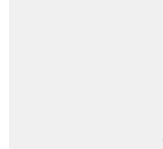
[3] - 1CR-2 contacts close energizing the control circuit.

[5] - 2CR-1 contacts close energizing the inducer fan.

Question 20

Partially correct

Mark 0.50 out of 1.00



Flag question

Question text

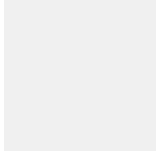
Referring to the figure, identify the limit controls:

The correct answers are: High Limit Aquastat, Low Water Cut Off, Flame Roll Out Switch, Pressure Switch

Question **21**

Correct

Mark 2.00 out of 2.00



Flag question

Question text

Answer

lights the main burner by use of a spark.

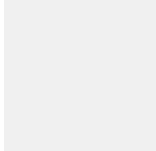
Answer

must first ignite and prove the pilot which in turn lights the main burner, the pilot continues to burn until the main burner is extinguished.

Question **22**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the most common voltage used for “Hot Surface Igniters” ?

Select one:



a.

Any voltage above 24 volts



b.

24 volts



c.

120 volts



d.

240 volts

Feedback

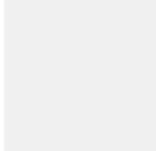
Your answer is correct.

The correct answer is: 120 volts

Question **23**

Incorrect

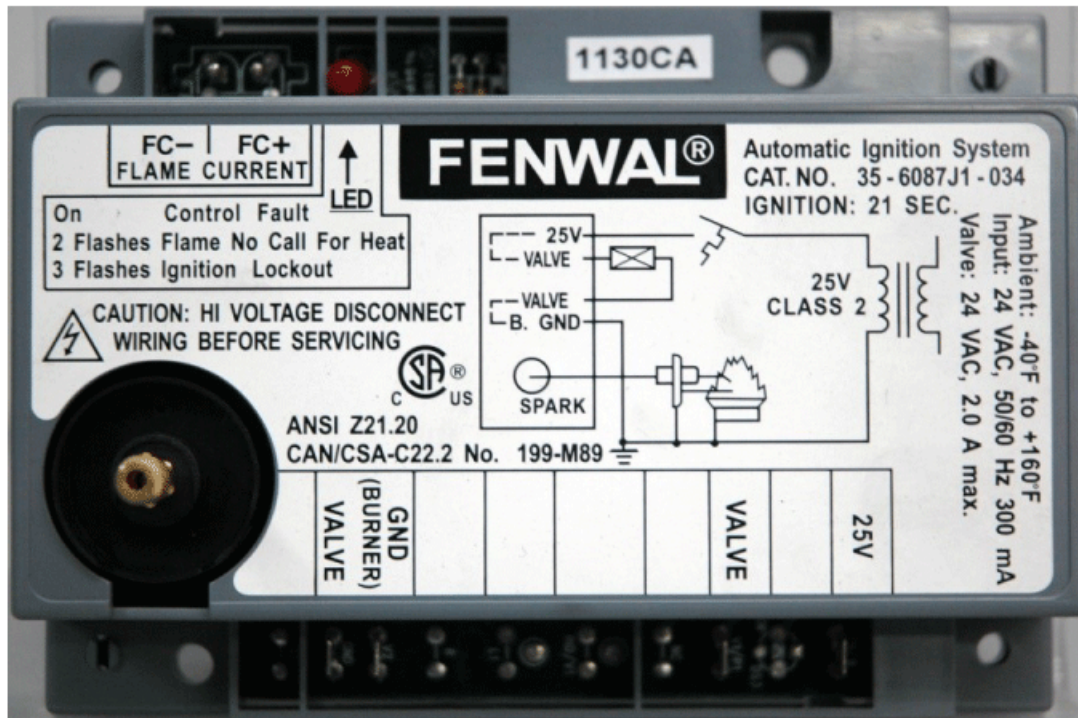
Mark 0.00 out of 1.00



Flag question

Question text

Which type of ignition system would the control module illustrated below be used ?



Select one:



a.
Standing Pilot



b.
Direct Spark Ignition



c.
FVR



d.
Direct Hot Surface

Feedback

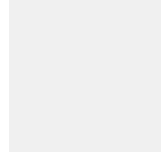
Your answer is incorrect.

The correct answer is: Direct Spark Ignition

Question 24

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

How would you reset a control module that has “Locked-Out”?

Select one:



a.
Push the reset button.



b.
Switch the appliance over to pilot ignition and run one complete cycle.



c.
Disconnect the spark igniter and call for heat to reset the module.



d.
Turn either the appliance disconnect switch off or the thermostat down for 1 – 3 minutes.

Feedback

Your answer is incorrect.

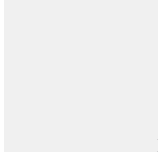
Turn either the appliance disconnect switch off or the thermostat down for 1 – 3 minutes.

The correct answer is: Turn either the appliance disconnect switch off or the thermostat down for 1 – 3 minutes.

Question **25**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are the three major classifications of furnaces?

Select one or more:

☐

a.

Direct Return

☐

b.

Strap On

☒

c.

Horizontal

☐

d.

Intermittent

☒

e.

Low Boy

☐

f.

Blow Back

☒

g.

High Boy

Feedback

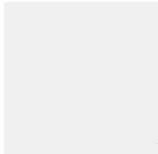
Your answer is correct.

The correct answers are: High Boy, Low Boy, Horizontal

Question **26**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are the two classifications of “High Boy” furnaces?

Select one or more:

☒

a.

Counter-Flow or Downflow

☒

b.

Upflow

☐

c.

Forward Flow

☐

d.

Upright

☐

e.
Horizontal

Feedback

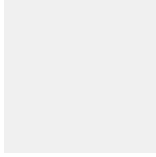
Your answer is correct.

The correct answers are: Upflow, Counter-Flow or Downflow

Question 27

Incorrect

Mark 0.00 out of 2.00



Flag question

Question text

When determining the temperature rise across the heat exchanger of a furnace. A thermometer should be inserted into the return air plenum within Answer

of the heat exchanger as well as a thermometer inserted into the supply plenum within Answer

of the heat exchanger. The difference of these two readings is the temperature rise.

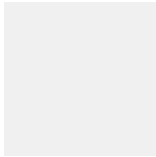
Feedback

Insert a thermometer into the return air plenum (within 6 ft.) and a thermometer into the supply plenum 2 to 3 feet away but not in the radiant view of the heat exchanger. The difference in temperature is the temperature rise.

Question 28

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Inserting an incline manometer or digital manometer into the return air plenum and supply plenum would determine which of the following?.

Select one:



a.
Temperature Rise



b.
Internal Static pressure



c.
Flow Rate



d.
External Static Pressure

Feedback

Your answer is incorrect.

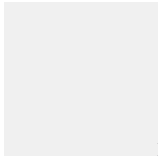
Insert an incline manometer or digital manometer into the return air plenum and supply plenum. The difference in pressure is the external static pressure (ESP).

The correct answer is: External Static Pressure

Question 29

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Identify the fan motor illustrated below :



Select one:



a.
Flux Capacitor Fan Motor



b.
Injector Fan Motor



c.
ECM variable speed direct drive fan motor



d.
Modulating Fan Motor

Feedback

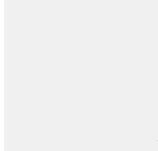
Your answer is correct.

The correct answer is: ECM variable speed direct drive fan motor

Question **30**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What could cause a belt drive fan motor blower to be noisy and inefficient?

Select one:



a.
no lubrication



b.
tear



c.
alignment



d.
material

Feedback

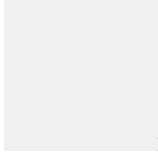
Your answer is incorrect.

The correct answer is: alignment

Question 31

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What are the two types of direct drive fan motors?
Select one or more:

☐

a.
Leaver (LFM)

☐

b.
Eccentric Rotor (ECM)

☒

c.
Variable Speed (ECM)

☒

d.
Multi-speed (PSC)

Feedback

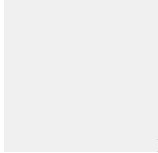
Your answer is correct.

The correct answers are: Multi-speed (PSC), Variable Speed (ECM)

Question 32

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Referring to the illustration below, which type of direct drive fan motor would be used?



Select one:

☐

- a.
Oscillating-drive
- ☐
- b.
Single-speed
- ☒
- c.
Any type of fan drive will work
- ☐
- d.
Multi-speed

Feedback

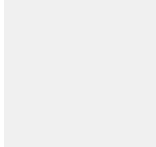
Your answer is incorrect.

The correct answer is: Multi-speed

Question 33

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is meant by the term “ECM” motor?
Select one:

- ☐
- a.
Electronically Controlled Motor
- ☐
- b.
Electric Combination Motor
- ☐
- c.
Electronically Cooled Motor
- ☒
- d.
Electronically Commutated Motor

Feedback

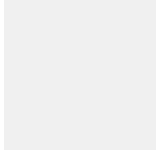
Your answer is correct.

The correct answer is: Electronically Commutated Motor

Question 34

Correct

Mark 1.00 out of 1.00



Flag question

Question text

If a furnace has a cooling coil installed that has a rated capacity of 40,000 Btuh, what would be the required air flow in CFM?

Answer CFM

Feedback

40 000 Btuh / 12 000 = 3.33 tons

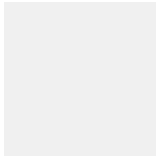
3.33 tons x 400CFM/Ton = 1 333.33 CFM

The correct answer is: 1333.33

Question 35

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

If a furnace has a rated output of 60,000 Btuh and the rating plate specifies a temperature rise of 40°-60°F, what would be the required air flow in CFM?

Answer:

Feedback

CFM = Btuh (output) / (1.08 x ΔT)

CFM = 60 000Btuh / (1.08 x 50F)

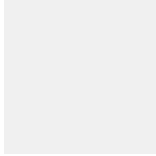
CFM = 1 111.11

The correct answer is: 1111.11

Question 36

Partially correct

Mark 3.00 out of 4.00



Flag question

Question text

If a furnace has the below values found on its rating plate, what would be the required fan speed for both high fire and low fire?

Appliance rating plate		
Heat Stage	HIGH	LOW
Input / Entree BTU/Hr	123 000	81 000
Output / Sortie BTU/Hr	101 000	66 000
Air Temperature Rise F 45-75		25-55
Air Temperature Rise C 25-42		14-31
External Static Pressure max. 0.5 in wc		

Fan Selection Table								
Air Delivery in Cubic Feet per Minute (CFM)								
Fan Speed	External Static Pressure (in.w.c.)							
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
High	2010	1950	1875	1810	1740	1660	1550	1455
Med-High	1675	1660	1625	1600	1545	1490	1395	1295
Med-Low	1445	1430	1415	1400	1370	1325	1265	1170
Low	1260	1260	1260	1250	1210	1180	1115	1030

High Fire CFM = Answer

CFM (calculated)

Low Fire CFM = Answer

CFM (calculated)

High Fire fan selection = Answer

Low Fire fan selection = Answer

Feedback

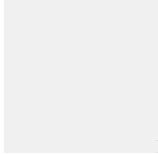
High Fire = $101\,000\text{BTUH} / (1.08 \times 60\text{F}) = 1558.64\text{ CFM}$

Low Fire = $66\,000\text{BTUH} / (1.08 \times 40\text{F}) = 1527.78\text{ CFM}$

Question **37**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A forced air furnace through which the circulating air flows in the opposite direction to the flue gas is a/an :

Select one:



a.
counter flow furnace



b.
horizontal furnace



c.
low boy furnace



d.
up-flow furnace

Feedback

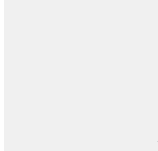
Your answer is correct.

The correct answer is: counter flow furnace

Question **38**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The basic job of an operating control on a boiler is to :

Select one:



a.
start the pump when the boiler water gets too cold



b.
energize the burner when the boiler water level gets too low



c.
energize the burner when the boiler water gets too hot



d.
energize the burner when the boiler water gets too cold

Feedback

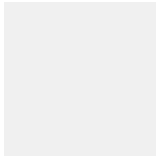
Your answer is correct.

The correct answer is: energize the burner when the boiler water gets too cold

Question **39**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

The fan control on a forced air furnace generally operates on :

Select one:



a.
24 V



b.
120 V



c.
30 mV



d.
750 mV

Feedback

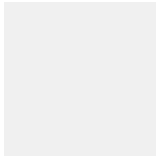
Your answer is incorrect.

The correct answer is: 120 V

Question **40**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

If the voltage produced by a thermocouple is less than 7 millivolts and the magnet will not hold in :

Select one:



a.
increase the high limit setting



b.
change the magnet



c.
change the thermocouple



d.
reduce the input to the pilot

Feedback

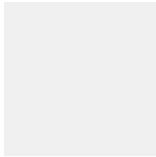
Your answer is correct.

The correct answer is: change the thermocouple

Question **41**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

What supplies power to the safety shut-off valve for an appliance that has a 24V control system and a standing pilot?

Select one:



a.
Thermopile



b.
Transformer



c.
Thermocouple



d.
Photocell

Feedback

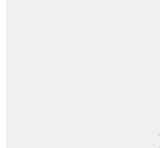
Your answer is incorrect.

The correct answer is: Thermocouple

Question 42

Correct

Mark 1.00 out of 1.00



Flag question

Question text

What is the primary purpose of a thermocouple ?

Select one:



a.
To prove that the pilot is lit



b.
To energize the gas valve



c.
To give 100% safety



d.
To supply power to the thermostat

Feedback

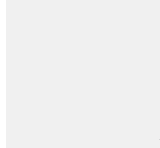
Your answer is correct.

The correct answer is: To prove that the pilot is lit

Question 43

Incorrect

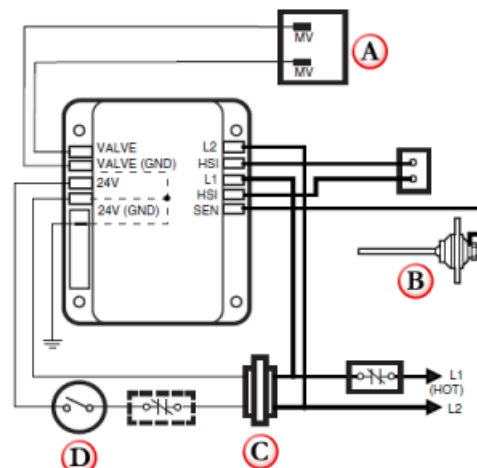
Mark 0.00 out of 1.00



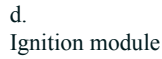
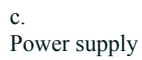
Flag question

Question text

In the illustration shown below, what does Item “A” indicate ?



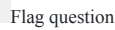
Select one:



Your answer is incorrect.

Question 44

Mark 0.00 out of 1.00



Which type of ignition system is illustrated?



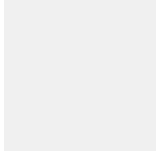
Your answer is incorrect.

The correct answer is: Direct hot surface

Question **45**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which fan speed is connected to the heating terminal ?

Select one:



a.

Med High



b.

Med Low



c.

High



d.

Low

Feedback

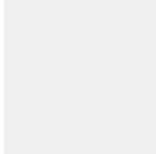
Your answer is correct.

The correct answer is: Med High

Question **46**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which device is connected to the terminal “XFMR”?

Select one:



a.

Flame Rod



b.

Transformer



c.

Inducer Motor



d.

Blower Motor

Feedback

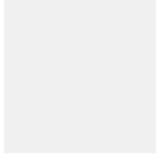
Your answer is correct.

The correct answer is: Transformer

Question **47**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which type of flame sensor is to be used ?

Select one:



a.

Infrared detector



b.
Flame rod



c.
Thermocouple



d.
Ultraviolet detector

Feedback

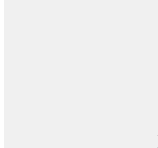
Your answer is correct.

The correct answer is: Flame rod

Question **48**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

How many pressure switches are required?

Select one:



a.
2



b.
1



c.
3



d.
4

Feedback

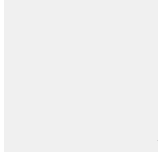
Your answer is incorrect.

The correct answer is: 2

Question **49**

Partially correct

Mark 0.50 out of 1.00



Flag question

Question text

According to the illustration which fan speeds are not being used ?

Select one or more:



a.
Med High



b.
Med Low



c.
Low



d.
Med

Feedback

Your answer is partially correct.

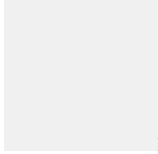
You have correctly selected 1.

The correct answers are: Low, Med Low

Question **50**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Which terminals are the transformer secondary connected to?

Select one:



a.

9 and 12



b.

5 and 11



c.

3 and 6



d.

2 and 4

Feedback

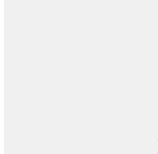
Your answer is correct.

The correct answer is: 3 and 6

Question **51**

Correct

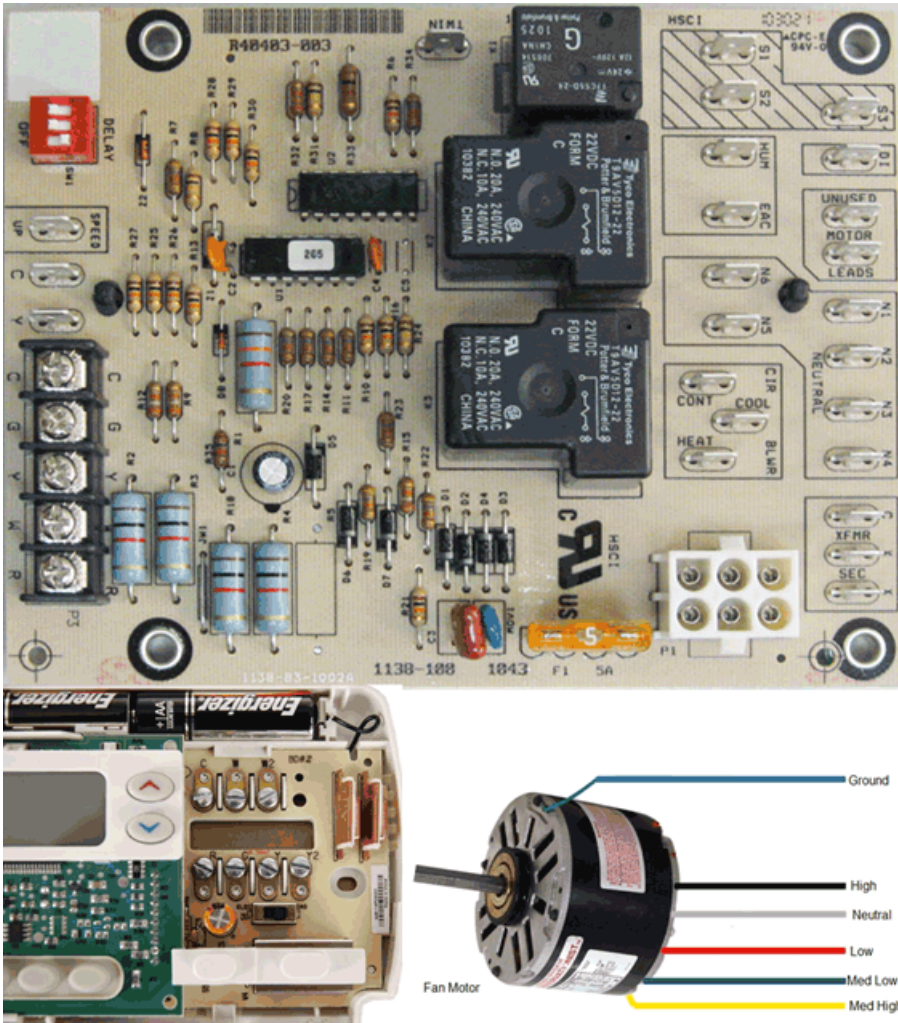
Mark 1.00 out of 1.00



Flag question

Question text

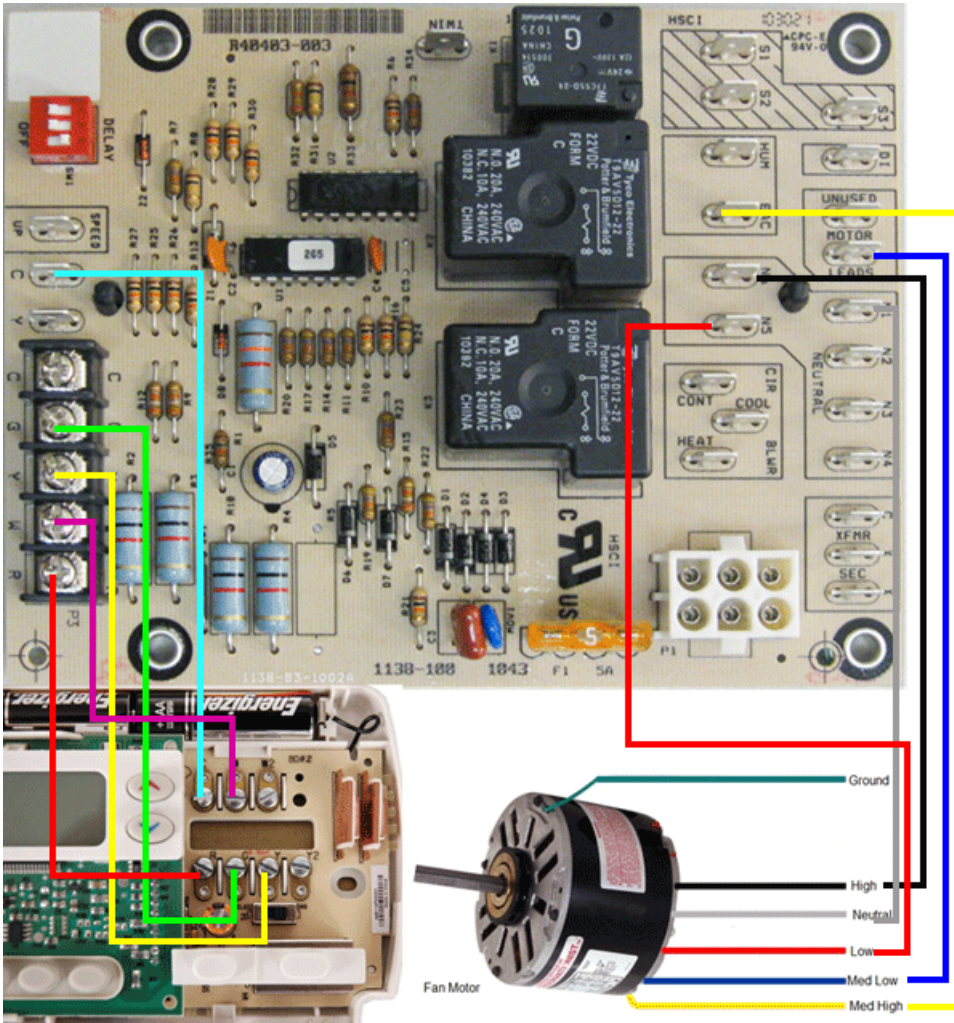
Using the illustration shown below, select the proper wiring to connect the fan motor and thermostat to the appropriate terminals on the circuit board. The fan motor is to run at high speed for cooling, Med High for heating and low speed for continuous operation:



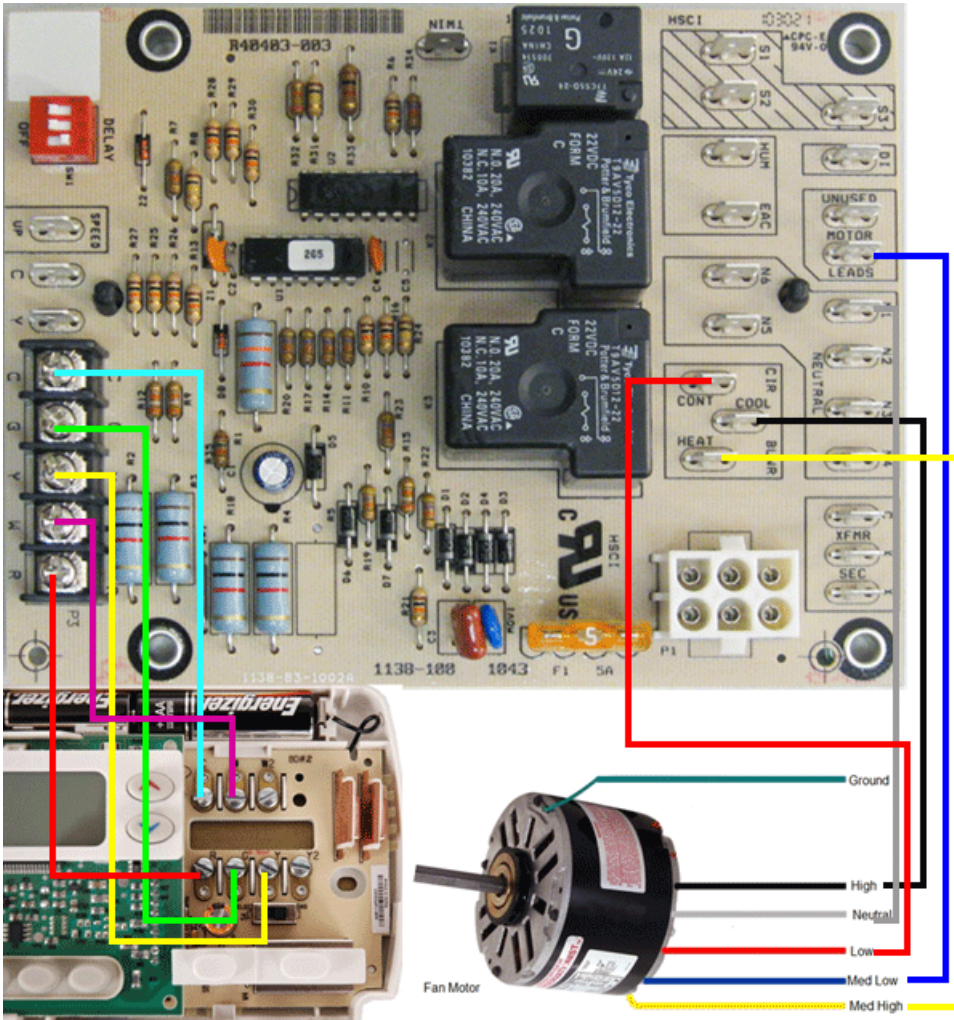
Select one:



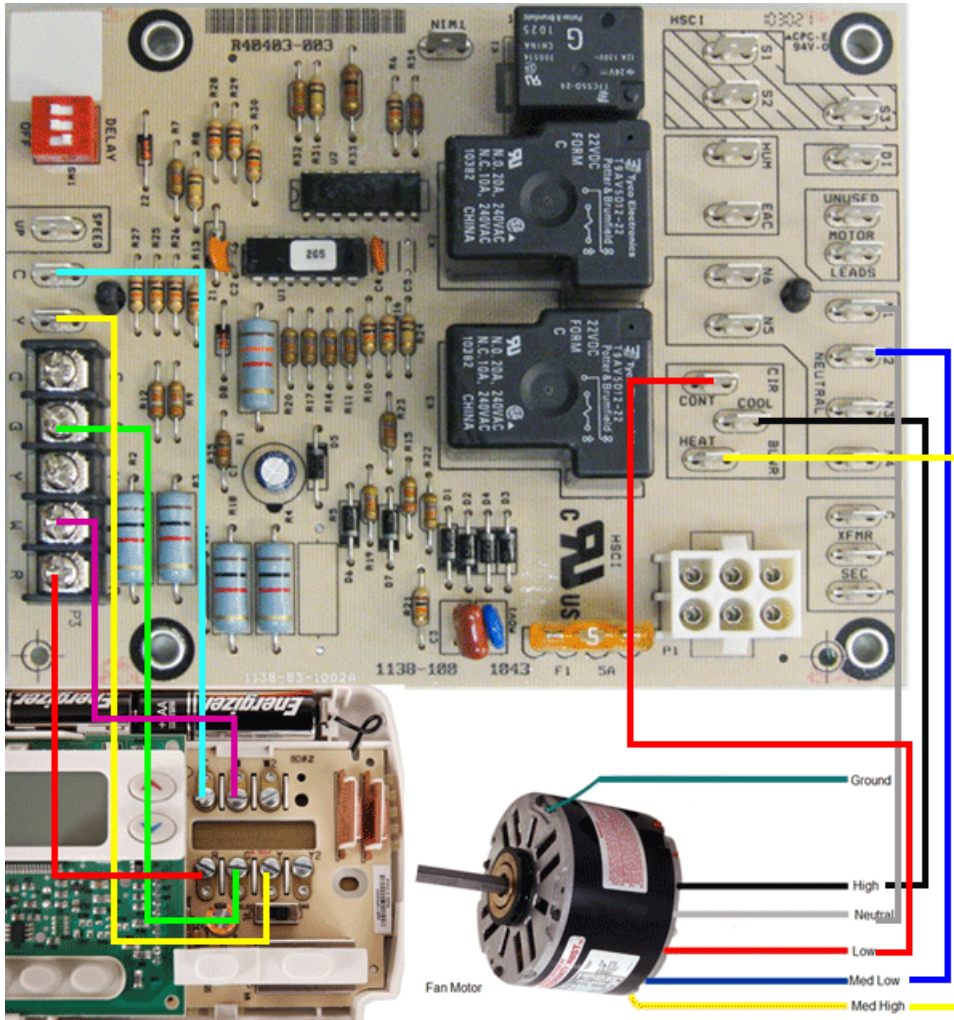
a.



b.



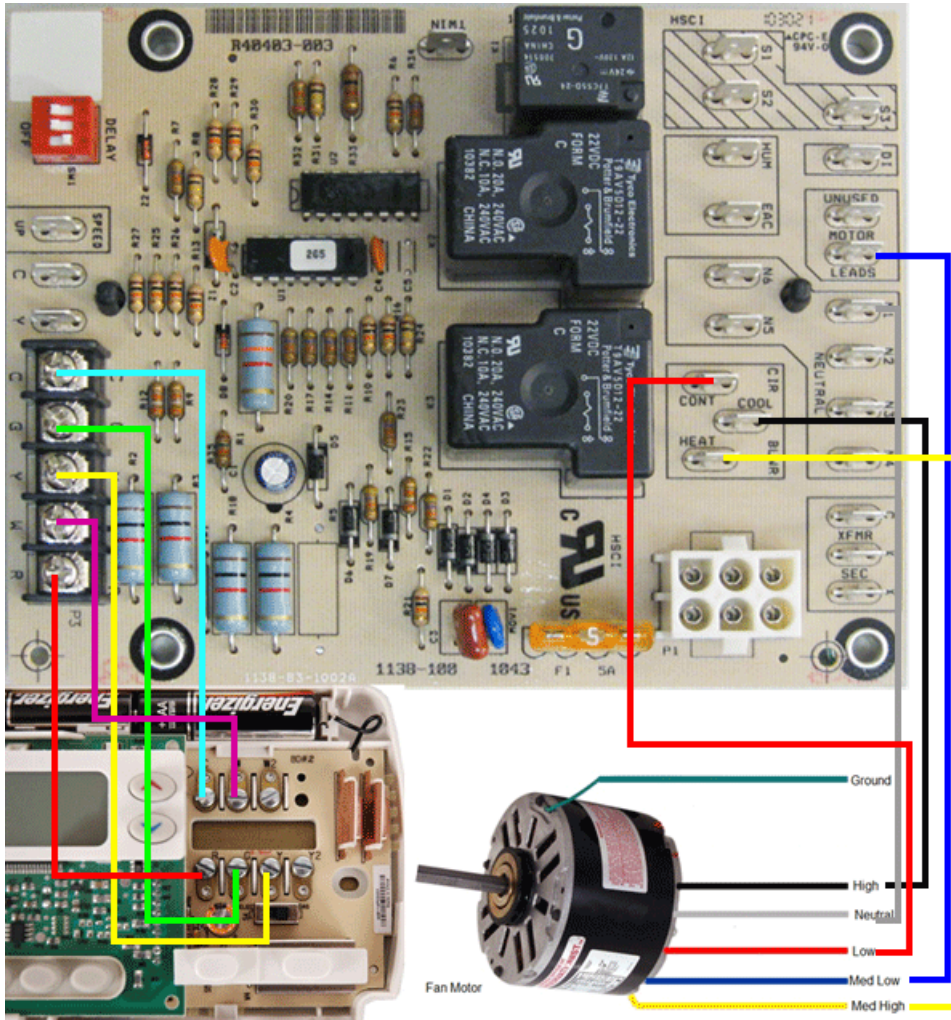
C.



Feedback

Your answer is correct.

The correct answer is:



Question 52

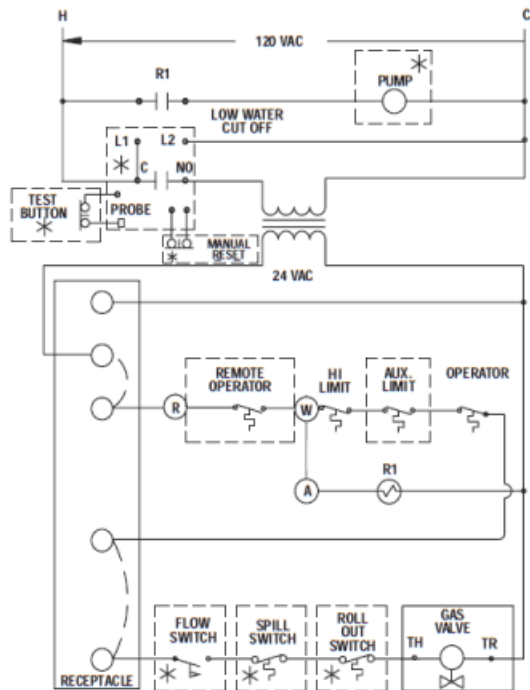
Correct

Mark 1.00 out of 1.00

Flag question

Question text

Referring to the following illustration, on a call for heat the remote operator (thermostat) contacts close. What would be the next step in the sequence of operation?



Select one:



a.
R1 is energized which opens the gas valve



b.
The Aux. Limit opens its contacts which energizes the pump



c.
The flow switch closes its contacts and energizes the gas valve



d.
Relay Coil R1 is energized, closing its contacts which energizes the pump

Feedback

Your answer is correct.

The correct answer is: Relay Coil R1 is energized, closing its contacts which energizes the pump

The operation and input of manual and automatic commands to run and monitor motors and devices can be done with_____?

Select one:



a.
Infrared communication



b.
Magic



c.
Network protocols



d.
USB

Feedback

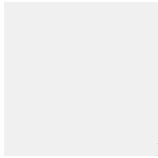
Your answer is incorrect.

The correct answer is: Network protocols

Question 2

Correct

Mark 1.0 out of 1.0



Flag question

Question text

Data is transmitted through a variety of different types of physical connections? (Identify three types)

Select one or more:

☐

a.

Wi-Fi

☒

b.

RJ11

☒

c.

USB

☒

d.

Serial

☐

e.

Bluetooth

☐

f.

Cellular

Feedback

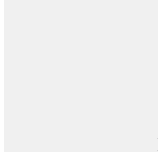
Your answer is correct.

The correct answers are: Serial, RJ11, USB

Question 3

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

The acronym BACnet stands for?

Select one:

☒

a.

Biometric Access Control Network

☐

b.

Building Automation and Control Network

☐

c.

Building Automation and Communications Network

☐

d.

Bank of America Corporate Network

Feedback

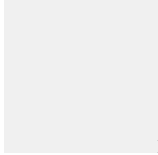
Your answer is incorrect.

The correct answer is: Building Automation and Control Network

Question 4

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

The LON is a Protocol primarily designed to be used with what type of mechanical system?

Select one:



a.
Elevator



b.
Sprinklers



c.
HVAC



d.
Plumbing

Feedback

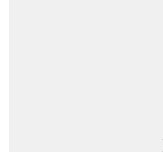
Your answer is incorrect.

The correct answer is: HVAC

Question 5

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

PLC programming software can be used on a variety of different manufacturer's hardware?

Select one:



a.
True



b.
False

Feedback

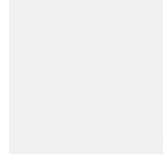
Your answer is incorrect.

The correct answer is: False

Question 6

Correct

Mark 1.0 out of 1.0



Flag question

Question text

PLC Programming software can be modified using a graphical interface, this interface is known as?

Select one:



a.
RFI (Request further Information)



b.
HMI (Human Machine Interface)



c.
RMI (Running Man Interface)



d.
CCI (Chevy chase index)

Feedback

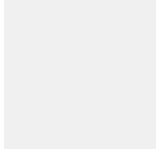
Your answer is correct.

The correct answer is: HMI (Human Machine Interface)

Question 7

Correct

Mark 1.0 out of 1.0



Flag question

Question text

A user defined PLC program might include pausing points, another name for a pause in a program is?

Select one:



a.

Initiating program



b.

Function



c.

Stop



d.

Interrupt

Feedback

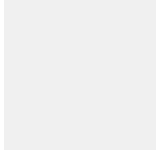
Your answer is correct.

The correct answer is: Interrupt

Question 8

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

Universal serial bus (USB) connectors that can transmit data in both directions are known by which type?

Select one:



a.

Type C



b.

Type B



c.

Type D



d.

Type A

Feedback

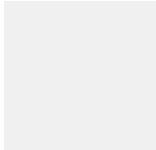
Your answer is incorrect.

The correct answer is: Type C

Question 9

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

USB Cords typically have four wires running the length to the ends, two wires are used for power and the other set of wires is used for _____?

Select one:



a.

Grounding and Bonding



b.

Bluetooth transfer



c.

Communications



d.

Data

Feedback

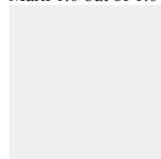
Your answer is incorrect.

The correct answer is: Data

Question **10**

Correct

Mark 1.0 out of 1.0



Flag question

Question text

RS-232 serial connections use a specific type of coding to transmit data, the voltages were sent as positive and negative voltages, which produces what type of communication language?

Select one:



a.

C++



b.

Pascal



c.

Binary



d.

DOS

Feedback

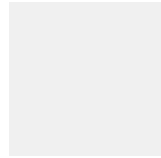
Your answer is correct.

The correct answer is: Binary

Question **11**

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

Serial Connections are able to communicate from controller to controller?

Select one:



a.

True



b.

False

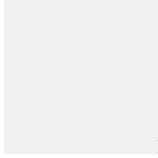
Feedback

Your answer is incorrect.

The correct answer is: False

Question **12**

Incorrect
Mark 0.0 out of 1.0



Flag question

Question text

The abbreviation RJ means which of the following?

Select one:



a.
Rick James



b.
Royal Jack



c.
Random Jack



d.
Registered Jack

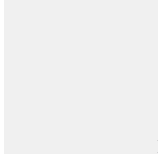
Feedback

Your answer is incorrect.

The correct answer is: Registered Jack

Question **13**

Incorrect
Mark 0.0 out of 1.0



Flag question

Question text

The typical RJ45 Cord has how many wires passing through it?

Select one:



a.
12 wires



b.
6 wires



c.
4 wires



d.
8 wires

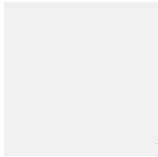
Feedback

Your answer is incorrect.

The correct answer is: 8 wires

Question **14**

Incorrect
Mark 0.0 out of 1.0



Flag question

Question text

Networking cable is of what type of RJ value?

Select one:



a.

11



b.
65



c.
45



d.
21

Feedback

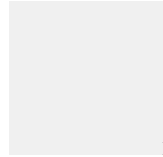
Your answer is incorrect.

The correct answer is: 45

Question 15

Incorrect

Mark 0.0 out of 1.0



Flag question

Question text

What application(s) could utilize the Z-wave communication system?



a.
Wired communication for home heating and or security systems.



b.
Wired communications for snapchat protocols.



c.
Wireless communication for home heating and or security systems.



d.
Wireless communication for programing appliance control boards.

Feedback

Your answer is incorrect.

The correct answer is:

Wireless communication for home heating and or security systems.

Outdoor resets adjust the boiler water supply temperature based on the ambient outdoor temperature?

Select one:



a.
True



b.
False

Feedback

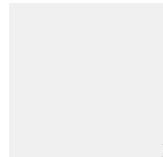
Your answer is correct.

The correct answer is: True

Question 2

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A Non-condensing boiler typically operates in the temperature range of _____?

Select one:



a.

120°F – 150°F



b.

140°F – 170°F



c.

160°F – 190°F



d.

135°F – 185°F

Feedback

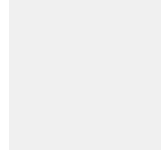
Your answer is correct.

The correct answer is: 160°F – 190°F

Question 3

Correct

Mark 1.00 out of 1.00



Flag question

Question text

The average savings using an outdoor reset controller is 1% for every 5°F reduction in boiler temperature, how much percentage reduction would be granted at a 35°F temperature drop?

Select one:



a.

3% Savings



b.

1% Savings



c.

5% Savings



d.

7% Savings

Feedback

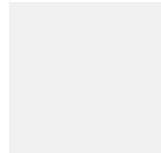
Your answer is correct.

The correct answer is: 7% Savings

Question 4

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

To promote longevity of a boiler, manufacturers recommend that boilers not be allowed to ____?

Select one:



a.

Long cycle



b.

Short cycle



c.

Run constantly



d.

Turn off

Feedback

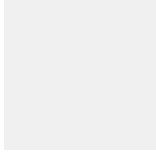
Your answer is incorrect.

The correct answer is: Short cycle

Question 5

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Boilers that are set to operate in a pre-defined sequence of rotating operation is a definition of _____?

Select one:



a.

Multiple Control



b.

Rotating Control



c.

Cascading Control



d.

Staging Control

Feedback

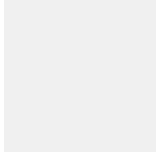
Your answer is incorrect.

The correct answer is: Cascading Control

Question 6

Correct

Mark 1.00 out of 1.00



Flag question

Question text

In multiple boiler configurations the outdoor reset is connected to which boiler?

Select one:



a.

Any Boiler



b.

The Furthest Boiler



c.

The Managing Boiler



d.

The Second Boiler

Feedback

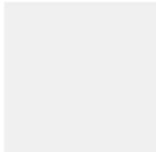
Your answer is correct.

The correct answer is: The Managing Boiler

Question 7

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When connecting multiple boilers to a terminal block, how are the boilers wired to the low voltage

terminals?

Select one:



a.

In Series/ Parallel



b.

In Series



c.

In order



d.

In Parallel

Feedback

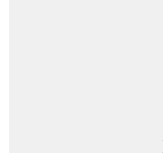
Your answer is correct.

The correct answer is: In Parallel

Question 8

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

When connecting multiple boilers to terminal blocks using 22 gauge wire, what is the maximum length of wire that can be run?

Select one:



a.

150 Feet



b.

200 Feet



c.

100 Feet



d.

110 Feet

Feedback

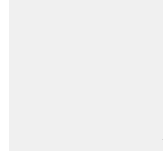
Your answer is incorrect.

The correct answer is: 100 Feet

Question 9

Correct

Mark 1.00 out of 1.00



Flag question

Question text

When connecting multiple boilers to terminal blocks and the wire length exceeds the recommended maximum length, what condition is created in the wiring? An excessive amount of _____?

Select one:



a.

Voltage



b.

Amperage



c.
Resistance



d.
Power

Feedback

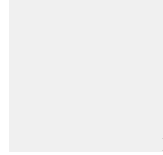
Your answer is correct.

The correct answer is: Resistance

Question **10**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Use the image to answer the following question.

The abbreviation RL stands for what?

Select one:



a.
Right Line



b.
Rolling Terminal



c.
Regulated terminal



d.
Relay

Feedback

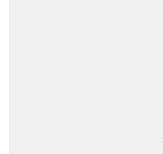
Your answer is correct.

The correct answer is: Relay

Question **11**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

Use the image to answer the following question.

Which terminals are used as part of the flow verification circuit?

Select one:



a.
Terminals 5-6



b.
Terminals 13-14



c.
Terminals 3-4



d.
Terminals 1-2

Feedback

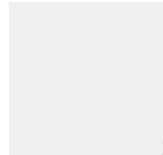
Your answer is correct.

The correct answer is: Terminals 3-4

Question 12

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Use the image to answer the following question.

Terminals 7-8 are used as boiler water sensor inputs what device is connected to those terminals to send a signal to the controller?

Select one:



a.
Transparent sensor



b.
Thermometer



c.
Thermistor



d.
Transformer

Feedback

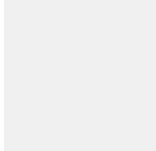
Your answer is incorrect.

The correct answer is: Thermistor

Question **13**

Correct

Mark 1.00 out of 1.00



Flag question

Question text

A thermistor is another name for what device?

Select one:



a.

A Terminal



b.

A Transformer



c.

An Outdoor Sensor



d.

A Relay

Feedback

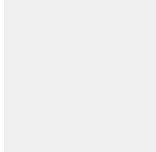
Your answer is correct.

The correct answer is: An Outdoor Sensor

Question **14**

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Use the following image to answer the question.

If a resistor is attached to terminals 10-11 what is the resistance value of the connected resistor when used as a thermistor input?

Select one:



a.

20 Ohms



b.

5 Ohms



c.

15 Ohms



d.

10 Ohms

Feedback

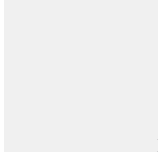
Your answer is incorrect.

The correct answer is: 10 Ohms

Question 15

Incorrect

Mark 0.00 out of 1.00



Flag question

Question text

Use the following image to answer the question.

In the pump sequencing mode, the terminals 23 -25 are used for the supply power for which pump?

Select one:



a.
The backup/standby system pump



b.
The controller



c.
The main system pump



d.
The auxiliary thermistor

Feedback

Your answer is incorrect.

The correct answer is: The backup/standby system pump